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What's Going on at Zapata Elementary? People, Research, and Technology in Educational Spaces: An Experiment in Experience and Possibility

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What's Going on at Zapata Elementary? People, Research, and Technology in Educational Spaces: An Experiment in Experience and Possibility

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Dedication

To readers.

Acknowledgements

I acknowledge that this dissertation was made possible by the generous direct and indirect help and support of a great many individuals. I acknowledge that the errors are mine and the moments of insight are thanks to those who supported me: Jennifer, Steven, and Curtis of my writing group; Kathleen, Lisa, Melissa, and Joan of my dissertation committee; Min Liu, my dissertation chair; and Omar and Kathleen, my parents.

I acknowledge that the societal discourses about having a PhD and the lived reality of obtaining a PhD are miles apart.

What's Going on at Zapata Elementary? People, Research, and Technology in Educational Spaces: An Experiment in Experience and Possibility

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The University of Texas at Austin, 2011

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Given the proliferation of technological tools, environments, and supports within the field of education, and the predominant investigative orientation of educational technology researchers being intervention-focused, a minority of scholars have called for other ways of understanding the nuance and contours of educational interactions and technology. This study explores the possibilities for such an orientation at the public elementary school level by maintaining a non-traditional theoretical and wide contextual focus. Toward this end, this study performs and constitutes an experimental mode of address meant to further considerations of educational technology use and educational technology discourse in and around school libraries, second, third, fourth, and fifth grade bilingual, ESL, and regular classrooms.

This work is a Deleuzian experiment in New Ethnographic Writing and New Ethnography that also explores aspects of critical design ethnography and the affinity-based design of an educational mashup. Ethnographic attentions were applied over four-year period concentrating on language arts, ESL, and literacy activities. Through performative writing, loose networks of individuals, artifacts, places, processes, movement, and machines are explored.

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Chapter 1 Introduction

'Literacy' is to some people a pleasing word: when 'illiteracy' percentages drop, many are pleased who formerly were shocked, and think no more of it. Disregarding the proved fact that few doctors of philosophy are literate, that is, that few of them have the remotest idea how to read, how to say what they mean, or what they mean in the first place, the word literacy means very little even as it is ordinarily used. (Agee, 1965, p. 265)

Don't take it too seriously. We were still priding ourselves on getting a B in geography and math when we were forced to look at men who had just been neatly shot in the stomach by a machine-gun salvo. Believe me, they all looked alike, those who had a B in Latin and those who had never heard of Latin. They looked ugly; there was nothing, absolutely nothing uplifting about them. They were all alike --Poles, Germans, and Frenchmen, heroes and cowards. ... They belonged to the earth, and the earth no longer belonged to them. (Böll, 1994, pp. 7-8)

Technology: creative means to a variety of ends (T. P. Hughes, 2004, p. 5)

[H]e hath laid the ground of all scholarship, who hath thoroughly learnt the right-naming of things (Comenius 1637 in Howatt & Widdowson, 2004, p. 44)

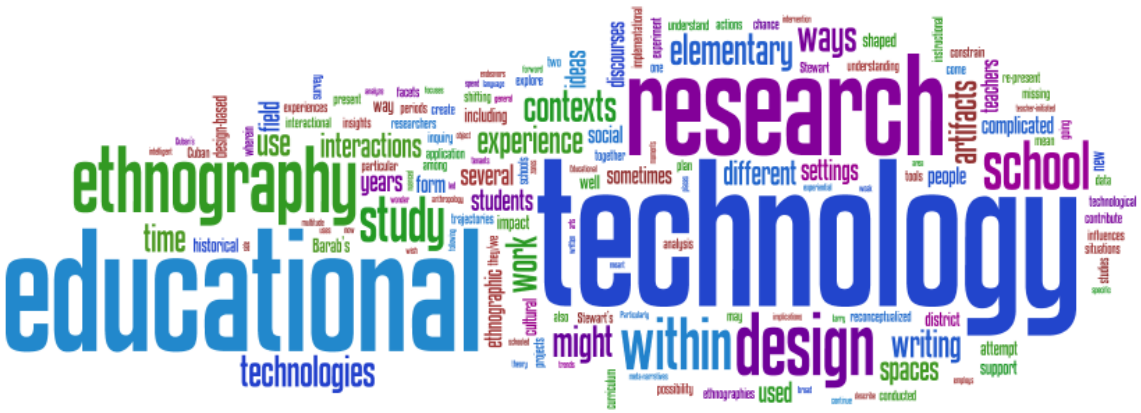

Figure 1: Tag cloud of all text contained in chapter 1.

A MAP

In this study I inquire about and re-present people and technological artifacts within the educational sphere as they/we interact with each other. I describe, wonder, analyze, and sometimes guess about (Horgan, 1996) what the experienced forces, feelings, and actions might have meant at the time and what they might mean for students, teachers, and educational researchers.

I explore situations wherein technology is tested, used, designed, developed, talked about, and pushed to the side –re-presenting those moments in ways that include something of the circulating historical (Benjamin, 1969) and social meta-narratives (Stewart, 1996) at work in these interactional zones.

It is my hope to produce something not unlike an ethnography of both experience and possibility wherein the writing wayfares (Ingold, 2007) among state & district aims, teacher-initiated projects, student experiences, past research, and academic technologies.

Schools are complicated, nuanced places where a multitude of individuals, discourses, and artifacts come together in intricate, chaotic, regimented, and sometimes wonderful ways.

Drawing from Kathleen Stewart's writing in the area of anthropology and new ethnography (1987, 1996, 2005, 2007, 2008), Sasha Barab's ideas about design, design ethnography and instructional technology (2007; 2005; 2004), and Ann Brown (1992), and Chris Dede's (2004; Dede, Nelson, Ketelhut, Clarke, & Bowman, 2004) thoughts on design-based research, this study applies experimental methodological and analytical tools to the field of educational technology in a [necessarily (Crotty, 1998)] unique way.

Particularly, I juxtapose multiple theoretical frameworks with regard to technology in educational spaces within an urban elementary school within a large school district (90,000+ students). Furthermore, in the study I work to extend, through experimentation, Barab's ideas of how ethnography might be used in the service of educational technology research and design (Barab et al., 2005). In hopes of accomplishing this, I apply ethnographic attentions to a range of situations and contexts – I scan the interactional horizon, I strive to maintain a wide-angle perspective of what's happening, I delay categorization while drawing cautiously from epistemological camps –wary of the rigid taxonomies they impose (Stewart, 1987).

Over the course of several years I asked some form of the ethnographic question, '*What's going on [at Zapata Elementary]?*' (Wolcott, 2008) or '*How will things unfold [at Zapata Elementary]?*' (Thorp, 2005) in terms of:

- educational technology use –especially during language arts, literacy, and ESL interactions,

- the introduction of two sets of iPod minis as well as one group's attempt to introduce an educational mashup (Liu, Horton, Olmanson, & Wang, 2008) they/we created (Olmanson, Farchy, & Day, 2010) to serve as:
    - a bridge between classroom goals and proponents of emerging technology integration in schools (Greenhow, Robelia, & J. Hughes, 2009),
    - a bridge between traditional notions of curriculum (Tyler, 1949) and reconceptualized ones (Pinar, 2006; Roy, 2003),
    - a means of experimenting with the use of ethnography in design-informing educational technology research;
- the use of something not unlike ethnography and new ethnographic writing in educational technology research –as a way of understanding complex contexts in general as well as its use in design endeavors.

Through this inquiry, I attend to the interactions of people (including myself), artifacts (including one which I have had a hand in creating), movement, and contexts (mostly within Zapata elementary school) which are in some way connected to technologies of education. It is my hope that the local, tentative, shifting insights which spring from this experience will circulate among those who read it in a way that subtly shifts how they approach and interact with the field of Educational Technology.

While more open-ended than many educational research questions, the above framing, given my extended temporal commitment to Zapata elementary, methodological plan of observation, participation, and inquiry, and experimental approach to interpretation affords me a reasonable expectation of being capable of both describing the experienced interactions and positing different ways these interactions might be understood or made to mean (Wolcott, 2008).

Over the course of the research experience I engaged broadly –eventually tracking through inquiry and, highlighting through writing (Clifford & Marcus, 1986), –particular moments, movement, and interactions, at the expense of other moments and interactions (Burke, 1935, p. 70).

In the proceeding sections, I use a combination of pre-fieldwork narratives and explanation to convey how I came to Zapata Elementary and how I identified:

- educational technology use,
- one example of design-informing educational technology research, and
- the fit between ethnography / new ethnographic writing in educational technology research,

as the primary or initial inquiry-worthy '*somethings*' (Wolcott, 2008, p. 74) for this research.

FINDING ZAPATA ELEMENTARY

Zapata elementary is located one mile south of the Capitol and one mile east of Interstate 35. The neighborhood is a mix of houses, apartment complexes, repair shops and brick buildings with bars in the windows and the words 'for lease' and 'for sale' written in black spray paint on the street-facing walls of the mostly empty retail spaces.

Having spent five years teaching in Houston ISD, the sixth-largest school district in the United States, I felt drawn to pursue the opportunity to conduct my pilot and dissertation research in a district that, within a reasonable geographical area, would somewhat approximate my HISD experience. Additionally, I was interested in working with a heavily bilingual/bicultural population of students and teachers as that also mirrored my teaching experience and research interest. In chapter three I relate a story of how I came

to conduct research at Zapata Elementary. *A* story and not *the* story for many reasons, some of which I address in chapter three.

Zapata elementary is a research site but it is more than a place to collect *my* data. It is a place to continue participating, to follow lines of flight (Deleuze & Guattari, 1983) and cultivate the affinities we share for certain in-progress outgrowths of past participation like the FunWritr collaboration which began as a conversation I had with one of the teachers at the school near the beginning of this research as well as another teacher's interest in producing a weekly video news program. The shared experiences, conversations, and plans allow me to follow my interests in ways that are participatorily purposive –creating arrangements where respondents who are not only full of information (Patton, 2002) but also already interested in similar issues and working toward resonant goals.

In the ethnographic case study, The Pull of the Earth, Laurie Thorp writes:

> There is no getting around it; participatory research takes time, more time than the machinations of academia will usually tolerate. Time, my time, is what the teachers have requested as they become engaged in this project. The teachers do not want or need more lesson plans, worksheets, guidebooks, or curricula; they yearn for deep lasting relationships in the classroom and across those borders into community and into our colleges and universities. (Thorp, 2005, p. 144)

By participating –with ethnographic attentions, by continuing to inquire and interact at Zapata I continue and intensify my participation in already ongoing conversations. Continuing at Zapata represents a chance to experience and witness (Behar, 1996) in a place where I feel welcome, where the students recognize me and some of the teachers nod to me in the halls. It is a place where I feel best equipped to listen, observe, move around, participate, and think about *what's going on* so that I can write about some of the things that *unfolded* at Zapata in terms of:

- the people with whom I interact,
- educational technology use in the classroom,
- the introduction of a set of iPod minis into two different classrooms,
- an online educational technology application,
- something not unlike ethnography and new ethnographic writing's role in educational technology research.

In the next sections I explain my interest in each of the above bulleted attentional frames.

EDUCATIONAL TECHNOLOGY USE IN THE CLASSROOM

According to recent national and internal district reports (Lanahan & Boysen, 2005; Malerba, n.d.), barriers to utilizing technology in educationally transformative ways remain conspicuously in place. This strand of inquiry asks the question, *What's going on at Zapata Elementary in terms of technology use* –especially within language arts and ESL contexts.

The redemptive promise of technology in public education is one of the most powerful and accepted discourses in modern US society (Oppenheimer, 2004). A long

line of inventions from the radio, to film and television up through contemporary desktop, laptop and handheld digital computing have all been hailed as interventions capable of revolutionary change in public schools (Cuban, 1986, 2003). Whether these promises are: supplemental or supplantational, purport better learning efficiency, tireless drill and practice, higher levels of motivation, more learner control, individualization or cost reductions (Cuban, 1986, 2003), the overall message is one of diode-delivered hope.

Nearly ninety years after educational technologies first entered both public discourses and public schools, 58% of elementary school teachers and 54% of foreign language/bilingual/ESL teachers reported acceptable levels of technology in their classrooms (Lanahan & Boysen, 2005). Yet despite the rising presence of technology in classrooms, public school educators identified having a teacher workstation for sending and receiving email as essential more often than classroom internet access (Lanahan & Boysen, 2005). Additionally, they rated the presence of a classroom telephone as essential more often than computer-based reference resources or a 4:1 student to computer ratio (Lanahan & Boysen, 2005) and were twenty-five times more likely to use technology for classroom testing, content review, and skills practice than for media production or other creative activities (Bakia, Yang, & Mitchell, 2008). In other words, instead of using technology to make new and wonderful things possible, they have marshaled its services largely within existing school structures to incrementally streamline traditional practices (Cuban, 1986, 2003).

So what might explain this disparity? Cuban (2003) points to underlying systemic challenges of low teacher pay, large class sizes, dilapidated infrastructure and a lack of

arts in education programs in elementary schools –also noting the exacerbatory impact the high cost of maintaining and purchasing the latest in technology hardware, software and networking equipment exerts on already meager budgets. He goes on to outline issues of technological complexity, rigidity and unreliability as areas of teacher concern when contemplating classroom technology use.

Much of Larry Cuban's work seeks to understand, if not untangle, the ways discourses about educational technologies often fail to align with patterns of technology use. In these meta-analytical studies Cuban looks mainly at survey and historical data and compares it to national standards, technology initiatives, and societal discourses about the role of technology in learning environments. While his findings identify obstacles to technology use that resonate with my experience working and learning in such environments, they do not address the ways educational technologies contribute to, constrain and are shaped by the day-to-day, complicated contexts and interactions present in such environments.

Furthermore from an empirical perspective, while Cuban's outlining of these obstacle-creating factors constitutes a compelling explanation for the underwhelming levels and types of technology utilization in the classroom; listing them based on a synthesis of too-often-used survey (Zhao, Pugh, & Sheldon, 2002) and historical data does not provide the sort of thick description (Geertz, 1973; Ryle, 1971) or experiential grist necessary to move the field of educational technology from the laundry-list '*what*' – what barriers to transformation remain, what designs perform better, faster, cheaper, what teachers, parents, students say about design *x* or technology *y* in general to the

ethnographic '*what*' which works to describe and theorize about the contours and nuance of the '*how*' and '*why*' of educational technology utilization (Zhao & K. A. Frank, 2003, p. 5).

Several decades of research has brought us to the understanding that the utilization of technology in classroom environments involves a constellation of complex, interrelated factors (Cuban, 1986, 2003; Zhao & K. A. Frank, 2003). Yet, despite this general agreement, most of these factors are studied in isolation (Zhao & K. A. Frank, 2003) and only very rarely –holistically (Voithofer, 2000; Wallace, 2004). This tendency to isolate features, elements, or factors from each other limits our ability as a field to understand *"the messy process through which teachers struggle to negotiate a foreign and potentially disruptive innovation into their familiar environment"* (Zhao et al., 2002, p. 483) and consequently constrains our efforts to communicate with educational technology as a cultural form. While surveys, historical analyses, and t-tests have contributed to what we know about the use of educational technology in classrooms, much of those findings place the people, artifacts, and context at a remove from the meaning they make (Guba & Lincoln, 1998). Their findings consequently have been found to be susceptible to variance in everyday actions, attitudes, and decisions as seen in the consistently spotty results achieved in educational technology-related scaling-up endeavors (Edelson, Gordin, & Pea, 1999; Zhao et al., 2002).

As Zhao and Frank (2003) point out and Wallace (2004) demonstrates, both the need for, and potential of transitioning from asking laundry-list, context-stripped (Guba & Lincoln, 1998) '*what*' questions to '*how*' and '*why*' questions –where context,

interactions, and messiness figure prominently, requires methods and a methodology capable of dealing with, if not embracing, complexity. It requires an experimental methodology capable of settling down and settling in to explore how educational technology is used in different educational spaces inside of classrooms. It requires methods capable of examining different types and layers of classroom and societal discourse (Gee, 2005a, 2007), different ways of approaching knowing (Cary, 2006), and different ways of writing up experience (Coupland, 1995, 2006; Goodall, 2000; Richardson, 1998; Richardson & St. Pierre, 2005; Stewart, 1996).

A *something* not unlike an ethnography of experience, based upon the everyday events and happenings at an elementary school –cautiously inclusive of social and historical perspectives and happenings which asks, *What is going on at Zapata Elementary in terms of educational technology use –especially in language arts and ESL contexts*? influences my trajectory of inquiry in taking up the challenge outlined in the previous paragraph.

Understanding local ways technology, its discourses, thinking and work around it enters, influences, is influenced by, or doesn't influence what happens in classrooms involves a focus that might include but goes well beyond:

- a single technology application or artifact,
- analysis of survey data, and
- the delivery of an intervention via a technological application.

I believe understanding what is going on in the preceding sentence involves sustained engagement and attention, as well as ongoing participation, experimentation, and rumination.

ONE EXAMPLE OF DESIGN-INFORMING EDUCATIONAL TECHNOLOGY RESEARCH

> [A]fter nearly 30 years and hundreds of studies, we have a list of winners and losers-what technological innovations are more or less effective than others or more or less effective than traditional instruction. However, technological advances have made most of the winners obsolete …, rendering early findings largely irrelevant to today's research and development in educational technology. Because many of these technology-specific studies did not explore more fundamental issues in technology and education-issues around the interface between technology and the educational establishment –the research community is having a difficult time offering desperately needed suggestions to policy makers and practitioners (Education Week, 1998; Norris et al., 1999). (Zhao et al., 2002, p. 483)

What Zhao and his co-authors in the above quote claim is that by concentrating on proving that specific computer software and other technologies could make a positive difference in learning gains made by students, they largely ignored, or were ill-equipped to explore, educational technology as a cultural form or dynamic phenomena constrained

by, contributing to, and re-created through time by the artifacts, individuals, groups, and contexts in which it exists (Wallace, 2004). The push has consistently been one of technological evangelism –with a search for the right combination of training, usability, delivery method, and user enthusiasm capable of bringing about the long-promised digitally-driven edutopia. This strand of inquiry asks the question, *What's going on at Zapata Elementary in terms of one group's efforts to introduce an online writing application* –within a language arts context in a way that seeks to better understand creative and participatory practices. According to a recent review of writing research (Juzwik et al., 2006), the relationship between writing and supportive technologies is an area of inquiry which has received less attention than other writing research sub-domains. A portion of my proposed research is an effort to address this disparity through a combination of experimental and established methodological practice.

I draw from a study I am conducting with a group of fellow graduate students. The study works to use ethnographic attentions to understand the classroom context prior to introducing an application we are creating, while also engaging the endeavor in relation to other things going on at the school including another technology introduction project, namely the introduction of iPod minis into two different classrooms.

This general and application-related orientation to inquiry and engaged participation resonates with my vision of a more qualitative, participatory avenue to design-informing insight, which –beside from drawing directly from the group's experience in designing, developing and attempting to introduce FunWritr into the

classroom, I hope to better understand as a result of pursuing other aspects of *what is going on at Zapata Elementary*.

I see this strand of inquiry as a mutually-informing opportunity for both my group work and dissertation study to gain perspective on the introduction of a particular design, of which I have some knowledge, into a context with which I have enjoyed a multi-year, participatory relationship.

NEW ETHNOGRAPHY'S FIT IN EDUCATIONAL TECHNOLOGY RESEARCH

> [M]ethods are ideas and theories in themselves (Noblit, Flores, & Murillo, 2004, p. 3)

> [R]esearchers in applied fields like education seem almost totally preoccupied with method (Wolcott, 2005, p. 56)

> Your methodology is your philosophy of truth. If you don't recognize that, then you can't really go on. (Conteh, Gregory, Kearney, & Mor-Sommerfeld, 2005, p. 91)

> [T]he tensions that guide an ethnographer's hand lie in the improbability of what you have lived and the impossibility of expressing it (Goodall, 2000, p. 7)

> [M]y goal is not to 'know' them or to collect them into a good enough story of what's going on but to fashion some form of address that is adequate to their form -to find something to say about [the ethnographic object] by performing some of the intensity and texture that make them habitable and animate (Stewart, 2007, p. 5)

Before studying ethnography through coursework and reading, I thought it was possible and advisable to simply point ethnographic methods at a focused, qualitative problem. I had planned to borrow participant observation which, as Foley (2002) points out, regardless of the epistemological flavor, remains a mainstay or base for almost all ethnography. As I learned more about ethnography, I felt a growing resonance between it and my orientation toward knowledge and coming to know. Yet, as these feelings grew and I began to articulate them, I began noticing warnings about, and critiques of ethnography's place in education. One argument against this way of experiencing and coming to know was also rooted in the immediacy of education's need. There was no shortage of educational problems, why not work in a more efficient way to address one or more of them? Some peers and professors in education felt that doing something not unlike ethnography was overkill –an exercise in excessive data collection with no guarantee of uncovering new and useful knowledge. Just as disconcerting, it seemed, was the lengthy time expectation for being *'in the field'*. Whereas quantitative researchers might spend an afternoon or a couple of days collecting pre and post-test data, and educational researchers using qualitative methods might max out at around three weeks worth of observation, ethnographers spent over a year observing and participating –only

to return awash in thousands of pages of notes and dozens of weeks worth of experiences. Much of my Ed School coursework encouraged me to view educational researchers as people who entered spaces for several days or weeks, observed, conducted interviews, collected documents, recorded interactions and then coded, recoded and decoded the -presumably- encoded data whose collection was propelled/focused by one if not several research questions whose aim it was to assign meaning and uncover useful findings which would advance the field of education and, hopefully, improve classroom conditions.

Additionally, the approach to writing up the research encouraged a style and organization that continually and forcefully argued for the arrived-at points, findings, and conclusions via a systematic and thorough analysis of data that was gathered while focused on the stated research questions and filtered through the lens of an adopted or adapted theoretical framework. The researcher was to make his or her case via a monolith-like monologue, a Tupperware-sealed, triangulated, chunk of research which, in some ways, harkens back to the long-jettisoned construct of *ethnography as speechmaking*.

In studying ethnography through coursework and reading, I was introduced to other ways of thinking about research. I found a range of people calling themselves ethnographers and a constellation of texts given the name ethnography. With the exception of *Quick Ethnographers* (Handwerker, 2001) I began to see them as researchers who see understanding as something that happens over extended periods of interaction and engagement, as writers who seek not only to report their experience but in

some cases performing that experience via engaging accounts of their participation in a range of settings in a way that was accessible to academics and the general public alike (Goodall, 2000) addressing the kinds of questions that fit with my interests and aligned with calls for wide-angle inquiry in my field (Wallace, 2004; Zhao & K. A. Frank, 2003; Zhao et al., 2002). I learned about what can happen in the field (Behar, 1996), about the range of variation in how ethnographers gather their data (Handwerker, 2001; Stewart, 2005; Thorp, 2005), about the researcher-specific processes they go through to identify, recognize, and/or trouble the patterns they point to in the resultant texts they create (Bishop, 1999; Foley, 2002; Goodall, 2000; Richardson, 1998; Richardson & St. Pierre, 2005; Stewart, 1996), about the way this draws upon personal, situational, interactional, temporal, financial and myriad other factors.

As Noblit, Flores, and Murillo (2004) state and Guba and Lincoln (1998) imply, the choice of method and methodology evokes and conveys elements of the researcher's beliefs and ideas about knowledge and its nature. Something not unlike an ethnography of experience and possibility certainly aligns with my ideas and beliefs about how experience, interaction, and meaning making might come together and get written up among the tensions and impossibilities (Goodall, 2000) that come with re-presenting the ethnographic *it* via text. In this work I pay attention to and inquire about the potential for this something, created via new ethnographic writing in the field of educational technology. I do this in part out of a belief that an experiment of experience and possibility might address current methodological challenges to get beyond multivariate comparison and instrumental observation in educational technology (Barab et al., 2004;

Zhao & K. A. Frank, 2003; Zhao et al., 2002) even as I try and to sidestep the pressure to instrumentalize this way of experiencing and re-presenting as an efficacious problem-solving tool –while also navigating a pragmatic, paranoid need to fashion or discover a career-enabling vehicle for my inquiry.

The well-documented, leaky-construct of something not unlike ethnography and new ethnographic writing –both further explained in chapter 3, not only make working to better understand *what's going on at Zapata Elementary* possible, it also makes possible attending to, ruminating upon, and communicating how its product might enable difference (Deleuze, 1994) within the field of educational technology research.

SUMMARY

Constructed via inquiry conducted over the past four years, this research is an experiment of experience and possibility wherein the writing wayfares (Ingold, 2007) among state & district aims, teacher-initiated projects, student experiences, past research, and academic technologies. Schools are complicated, nuanced places where a multitude of individuals, discourses, and artifacts come together in intricate, chaotic, regimented, and sometimes wonderful ways.

During multiple years I have asked some form of the ethnographic question, '*What's going on [at Zapata Elementary]?*' (Wolcott, 2008) or '*How will things unfold [at Zapata Elementary]?*' (Thorp, 2005) in terms of:

- educational technology use –especially during language arts, literacy, and ESL interactions,

- attempts to introduce technologies including two sets of iPod minis and an educational mashup (Liu et al., 2008) I continue to develop with a group of graduate students (Olmanson et al., 2010) to serve as:
    - a bridge between classroom goals and proponents of emerging technology integration in schools (Greenhow et al., 2009),
    - a bridge between traditional notions of curriculum (Tyler, 1949) and reconceptualized ones (Pinar, 2006; Roy, 2003),
    - a means of experimenting with the use of ethnographic attentions in design-informing educational technology research;
- the use of something not unlike ethnography and new ethnographic writing in educational technology research –as a way of understanding complex contexts in general as well as its use in design endeavors.

Through this inquiry, I attended to the interactions of people (including myself), artifacts (including one which I have had a hand in creating), movement, and contexts (mostly within Zapata elementary school) which are in some way connected to educational technology. It is my hope that the experiences that spring from this endeavor that I have written about and framed have: led to insight, helped me grow as a researcher, done no harm and have possibly benefited the student and teacher-participants with whom I interacted, and led to palatable ways of presenting aspects of the research to those in my field—gaining acceptance among those in the field of Educational Technology.

In the proceeding chapters I use a tag cloud of all the words used in the chapter as part of its summary. This may leave some wondering how to feel about what they have just read and what if anything they are to take away from an image of words arranged by frequency. They may see a tag cloud as a missed opportunity to offer up the salient

aspects of the last thirty or so pages. I've made the decision to partially sidestep having this type of expected summative *final say* in order to play with language via technological means and perform a resonant aspect of new ethnography. Clough (1998) positions writing as a mechanism through which researchers in the social sciences build worlds bent toward overcoming the unknown. As someone who has doubts about what can be known and harbors skepticism about tools and structures which prop up efforts to know as knowing, I'm interested in experimenting with the craft of writing and some of the structures of academic discourse which collapse already simplified, coherent treatments of research experience within abstracts and summaries. This is not to say that I feel tag clouds are unproblematic but rather that I wish to experiment and wayfare down multiple paths. For example, the tag cloud at the beginning of this chapter (and also below) might be taken to imply –through the inclusion of words such as *within*, *spaces*, and *contexts* amongst the terms *experience*, and *interactions* that the study of educational technology is not only understood through snapshots of use or t-tests but also through multi-layered narratives of interactions, how technology circulates over time and in the space of leaky learning environments.

Figure 2: Tag cloud of all text contained in chapter 1.

Chapter 2 Literature Review

> [A quality literature review entails] the use of ideas in the literature to justify the particular approach to the topic, the selection of methods, and demonstration that this research contributes something new. (Hart, 1998, pp. 1-2)

A MAP

In this chapter I write about different histories of, discourses about, and research pertaining to technologies of, and technology in, education. In my effort to engage the literature, I have tried to interact with and weave together different perspectives on the influence exerted by and upon *technology*, *education*, and the gaps and connections between these two constructs. In this chapter I experiment with the literature-reviewing genre through a proliferation of asides, case studies, quotes, and related content. In so doing, I attempt to orient myself to the field, and the reader to my experimental approach. While the writing resonates in many ways with chapter one, it also marks fissures, aporias, and shifts in understanding attributable in part to this process of study and inquiry.

INTRODUCTION

> History is the subject of a structure whose site is not homogeneous, empty time, but time filled by the presence of the now [Jetztzeit [mystical nunc stans]]. (Benjamin, 1969, p. 261)

> As creatures in a human-built world, we should better understand its evolution. (T. P. Hughes, 2004, p. 2)

> [Educational Technology is] the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. (AECT, 2008)

Educational institutions, working to produce fit, capable, relevant workers (Postman, 1993), and instructional designers and researchers in academia working to improve the efficiency, capacity, and efficacy with which students are produced, often turn to educational or instructional technology researchers and designers when they need to amplify solutions via automation or create new and novel ways of approaching what they see as learning problems or accelerating students through stages of development (Travers, 1982). The belief that emerging or current technology might succeed where past efforts were determined to be insufficient infuses policy makers and the general populace with hope upon each breakthrough (Cuban, 1986). Helping schools help their students acquire the state mandated curriculum in less time, more cheaply, or with better fidelity is the most commonly offered raison d'être of educational technology design and is embedded in the Association for Education Communication and Technology's definition above. If you can introduce, create, or adapt some intervention, some environment, some microworld (Barab et al., 2005; Papert, 1980) that stimulates students while they internalize the explicit curriculum without wholly violating the implicit curriculum

(Eisner, 2004) you have made a difference worthy of dissemination. Improving student motivation (Bell, 2005), decreasing teacher planning (Cuban, 2003) or technophobia, increasing usability, improving student attitudes (Kolikant, 2009), or extending local solutions to other regions (Dede, Honan, & L. Peters, 2005) all comprise some of the possible trajectories in educational technology.

From instructional systems design (Reigeluth & Beatty, 2003) to design-based research (Collins, Joseph, & Bielaczyc, 2004) to critical ethnographic design (Barab et al., 2004), instructional and educational technology researchers have worked diligently – creating constellations of ways to approach the design, development and evaluation of programmed instruction / learning technologies to assist [and sometimes replace] teachers in the quest to maximize learning, improve performance (Januszewski & Molenda, 2008) as well as to develop future iterations of the applications and educational processes they create.

In Chapter One I wrote about how Zhao and his colleagues, as well as Yeaman, below, are unconvinced that the status quo of competition, comparison, and hard work are the field-forwarding trajectories as one might be encouraged to believe given all the journal articles, conference papers, keynote addresses, and design efforts undertaken by those in the field. They write:

> Traditionally, studies on educational technology have been largely interested in finding out, in horserace fashion, the relative success of particular innovations as it affects student learning ... after nearly 30 years and hundreds of studies, we

> have a list of winners and losers -what technological innovations are more or less effective than traditional instruction. However, technological advances have made most of the winners obsolete ... because many of these technology-specific studies did not explore more fundamental issues in technology and education -issues around the interface between technology and the educational establishment- the research community is having a difficult time offering desperately needed suggestions to policy makers and practitioners (Zhao et al., 2002, p. 483)

> There has, overall, been continual endorsement of the existing state of affairs as the pinnacle of achievement -with more wonderful progress just around the corner- if we could overcome the latest crisis by working harder (Yeaman, 2001, p. viii-ix)

So what in the way of a literature-reviewing knowledge project am I to undertake given the resonance I feel with Zhao, Yeaman, and Cuban? If joining or critiquing the horserace means examining the most recent salient articles and applications the field of educational technology has to offer then what other avenues exist?

I propose to wayfare (Ingold, 2007) among meta-narratives of science, technology, society, and education –tracking some of the ways they have influenced, and were influenced by, a group of practitioner-researchers officially organized more than forty-five years ago –but whose influences and forerunners go back hundreds of years (M. A. Peters & Burbules, 2004). I associate my motivation in part with a belief that a

better understanding of various historical and contemporary influences on the field might help me to articulate a position which sidesteps calls to: strive toward techno-educational utopias, keep their heads down and make incremental gains, or accept the bad with the good and just try to make the best out of what there is (LaFreniere, 2008).

While I am in general agreement with Zhao and colleagues pessimism (2002) about the organization and trajectory of the field, I take issue with their inclination to approach education and technology from a problem or issue-centric perspective. Seeing the goal of educational technology as providing solutions to predefined problems contributes to the sort of horse-race orientation with which Zhao's quote above takes issue. Attempting to address predefined problems confines educational technology efforts to the world views of those who determine what constitutes a problem in the first place. Additionally, a problem-solving approach to educational technology gives rise to secondary and tertiary issues such as, why the technology does not work as planned, why it is not used as designed, or why it is not used at all. I allude to variations on these questions in chapter one, though perhaps not to join the horse-race but rather to offer the field a recognizable entry point into my project before shifting to other lines of inquiry.

How then do we begin to make sense of the field of educational technology through its literature? Perhaps by exploring how the field makes sense of itself. In the following sections of this chapter, I track educational technology via the language its professional associations have used to define it. I also engage with histories of designed artifacts, of educational movements, and technological perspectives. In so doing, I hope

to produce a literature review which might act as a form of address with regard to the expectations and responsibilities of academia (Holley & Colyar, 2009) while:

- maintaining the experimental qualities which I feel resonate with my nascent notion of knowing,
- expanding the perspectives from which I am able to make meaning,
- performing something which moves in the direction of the type of scholarship I hope to produce,
- reorganizing how I interpret my desire to design and develop educational technology processes, and
- preparing me to understand, if not enact, how the way I think about research and inquiry interacts with some of the circulating contemporary and historical discourses I explore.

> Technology is not just machines and men. It is a complex, integrated organization of men and machines, of ideas, of procedures, and of management. (Hoban, 1965, p. 124)

> Asking if computers do a better job of teaching about the solar system than textbooks do is but a diversionary question. The line of inquiry more to the point is how computers in classrooms change what is meant by learning, by science, by classroom, and by education. (Postman, 1993, p. 19)

TECHNOLOGIES OF/IN EDUCATION

For the history of ideas tells us among other things how we got to think the way we do -and if that is not of importance, one wonders what is. (Boas, 1969, p. 3)

Retrospective accounts of educational technology usually tend to lack scholarship. Published articles and chapters either are memoirs and reminiscences without corroboration from records or are collections of subjectively selected facts and unsorted details connected by a chronology ... there has, overall, been continual endorsement of the existing state of affairs as the pinnacle of achievement -with more wonderful progress just around the corner- if we could overcome the latest crisis by working harder (Yeaman, 2001, p. viii-ix)

Educational technology might best be described as a "world view" of education, which sees education as instruction. Instruction is considered as a set of activities and strategies that can be prescribed to bring about pre-specified and measurable learning objectives. The activities and strategies associated with this view are based on established theories of learning and are developed and tested to ensure reliable and replicable results. As a worldview of education, educational technology emphasizes applying scientific techniques to solving educational problems in efficient and effective ways. ... [resulting] in an attitude of action ... [valuing] technique over philosophy. (Januszewski, 2001, p. 118)

(1)

Orbis Sensualium Pictus,

A World of Things Obvious to the Senses drawn in Pictures.

Invitation. I. Invitatio.

The Master and the Boy.

M. Come, Boy, learn to be wise.

P. What doth this mean, *to be wise?*

M. To understand rightly.

Magister & Puer.

M. Veni, Puer, disce sapere.

P. Quid hoc est, *Sapere?*

M. Intelligere recte,

Figure 3: A page from Jan Amos Comenius' book Orbis Sensualium Pictus.

In 1658, Jan Amos Comenius, the most famous language and literacy teacher of his age –credited with developing the practice of leveled reading books (Laurie, 1887), wrote and published the first illustrated language learning textbook *Orbis Sensualium Pictus* [the world of senses in pictures] (Comenius, 1999). His book was a major breakthrough in the teaching of language –enabling the use of multiple sensory channels in the form of both graphic communication and multilingual text (Hlynka, 2009). Built upon tactile exercises (Howatt & Widdowson, 2004) and packaged as a method or program of instruction (Saettler, 2000) for language teaching that downplayed

memorization and repetition (Louthan, 1998), the 1658 publication of *Orbis Sensualium Pictus*, written to help guide language and literacy teaching at the rural elementary school Comenius founded in North Eastern Hungary, signaled the end of a twenty-year drought in his writing career and is the moment in history Denis Hlynka (2009, p. 47) designates as the start of what we know today to be *educational technology*.

Educational textbooks might not have even been such a notable phenomena were it not for the proliferation of schools in the 17th century. Postman (1993) credits the very active printing presses in Northern Europe with creating an accessible sea of texts and information, leading to advances not only in science and industry via inter-scientist communication and as an instrument of standardization in terms of mathematic symbols, the use of Arabic numerals and the vernacular instead of Latin, but also the need for a more educated citizenry to navigate and participate in an increasingly complicated, *texted* world. Before the emergence of the printing presses, England had a mere 34 schools in the entire country. Two years after Comenius' illustrated textbook was published in 1658, that number had risen to 440 (Postman, 1993).

What started, in Hlynka's opinion, with the publication of an illustrated language learning textbook (Comenius, 1999), has evolved into a leaky-yet-discernable cultural form called *educational technology* –a field legitimated at the highest levels of industry, academia, and government –a construct that encompasses efforts to theorize, inspire, instruct, improve, design, develop, deploy, assess, analyze, ruminate, write, present, and publish.

Just what is being theorized? Who the architect and who the recipient of that instruction, that design, that publication? Moreover, what sort of history might we track in order to make legible some of the forces circulating during the inception of the field of educational technology? What insight might be gained by such an attempt to understand the field via its own efforts to establish, legitimate, and define itself? To what extent can we notice their residual influence even today and what external histories figure in?

CASE STUDY IN TECHNOLOGY AND TECHNOLOGY FRAMING: INNOVATOR-CENTRISM

As we see with Jan Amos Comenius's textbook above, forefronting the inventor of a particular technology, technical process, or technological outcome constitutes one way technology is framed. Often this frame is used to celebrate the individual credited with the invention, positioning innovation as a way to influence one's personal financial and political circumstances (Nowotny, 2006) while contributing to the greater good of society.

Sometimes the tight coupling of the inventor –Gutenberg for example, with his *invention* –in this case metal movable type, oversimplifies the context, exaggerates the flash of brilliance on the part of the inventor, and underemphasizes previous, parallel, and/or subsequent development. The *invention* of movable type, a complicated, well-chronicled, moment in the history of an entire family of printing press and earlier line-making technologies (Ingold, 2007). While it is part of a temporally and geographically diverse history, this one moment and one individual is most often set apart from and above other writing-related events and actors. The forefronted moment is commonly articulated as *Gutenberg's* 1453 CE invention of the movable-type-enabled printing press

(Karwatka, 1996). While this moment was certainly an important one in the history of line making, Christianity, literacy (Volti, 2000), and schooling (Postman, 1993), singling out Gutenberg, who took on the financial risk that would eventually bankrupt him in order to realize the press, leaves less attentional bandwidth for other factors, actors, and events that situate movable type within a (decidedly non-empty (Benjamin, 1969)) historical context of artifacts, processes, and practices associated with written communication. For example, woodblock printing –from which movable wooden type and then the more expensive and durable metal type could be seen as reasonable next-steps were common in the 1400s. Print technologies themselves could not move forward until papermaking technologies made their way into Europe through Spain in the thirteenth century (Griffiths, 1996). There are also instances of the invention of movable type which precede Gutenberg by hundreds of years. Ceramic movable type was used in China as early as 1052 CE and movable metal type appears in thirteenth century Korea (Headrick, 2009). The syntax or grammar of an artifact or device framed through the innovator-centric lens moves the focus from the artifact to the individual inventor, usually showing him or her to be an upwardly mobile, insightful, mechanically-inclined, educated, risk-taker somehow ahead of his or her time (Karwatka, 1996). While individuals with these attributes often play a role in the development of technologies, relying primarily on such a perspective to craft accounts of technology development leaves little room for incongruities and deviations from the narrative of the heroic inventor. Furthermore the idea of invention is easily conflated with innovation. Gutenberg's decision to standardize page layout, use Arabic numerals in page numbering,

include color illustrations and decorations, and selection of subject matter –deciding to print more than fifty copies of the bible, are more likely to be why he is remembered above other inventors who came centuries before him. In fact, religion and religious unrest became an important part of the business model of printing presses for decades to come. Some of the most profitable presses operated in Northern Europe using two different names, one for the printing of books banned by the Catholic church and one for orders from the Catholic church (Misa, 2004).

A second example of this individual-centric technology frame involves perhaps the most celebrated inventor in the history of the Western world. Despite the soaring rhetoric, Leonardo da Vinci was by no means a rogue inventor alone on the precipice of technological greatness. Da Vinci counted courtly engineers and project collaborators within his circle of acquaintances, with whom he could converse and trade ideas in the language of engineering. Of the estimated 18000 pages of writings and drawings Leonardo left at his death, about 6000 have been recovered. Yet while the idea that Leonardo was the creator of each design or the originator of every idea within those pages is no longer held among scholars (Misa, 2004), his legend as a technological genius, alone in a backward world remains. Invention and innovation, even that of our most celebrated heroes did not operate in a vacuum but relied upon dialogue, access to financial and/or political capital, and the insights and advances of forerunners and peers (Misa, 2004).

TECHNOLOGIES OF/IN EDUCATION CONTINUED

The Association for Educational Communications and Technology [AECT], which named the field in 1972, has, since the early 1960s, taken an almost obsessive stance in defining, explicating, and redefining what the *term* educational technology, as well as the *field* itself encompasses (Januszewski, 2001; Januszewski & Molenda, 2008; Reiser & D. Ely, 1997; Saettler, 2000). The work of the AECT's Definition and Terminology Committee offers several points of entry into the academic and professional influences on the construct or cultural form of educational technology. As I stated earlier, by engaging the AECT's long history of self-definition, I might better understand some of the circulating forces at play in educational technology as they are: positioned, used, and produced through history, in society, in academia, and at Zapata elementary.

> If educational technology is a process ... then why does most of the history that is written about it focus on the hardware and equipment that is used in the field? The development of hardware and equipment did not give rise to the process of educational technology. It was the process that allowed for the development of hardware and equipment. (Januszewski, 2001, p. xxiii)

In his history of educational technology –used as a guide in this section - Januszewski (2001) endeavors to make meaning out of the efforts of the AECT, as well as other groups, to define educational technology. Beginning his inquiry at the dawn of the 20th century, he lists three primary elements whose coalescence in the 1920s to the

late 1950s enabled the eventual establishment of the field. According to Januszewski, engineering education, science, and the emergence of audiovisual communications each influenced and continues to influence the general direction of the field.

In 1911 Fredrick Taylor published a set of management techniques which were used to organize U.S. industry (1919). These techniques began attracting the attention of educators –giving them a different way to view schooling and learning (Callahan, 1964). One of the first to connect Taylor's techniques with education was James Munroe (1912, p. 20) who stated *"we need educational engineers to study this huge business of preparing youth for life, to find out where it is good, where it is wasteful, where it is out of touch with modern requirements, where and why its output fails."* Munroe coupled schooling and education with industrial business, saying that educational

> engineers would make a thorough study of (1) the pupils who constitute the raw materials of the business of education; (2) the building and other facilities for teaching, which make up the plant; (3) the school boards and the teaching staff, who correspond to the directorate and the working force; (4) the means and methods of instruction and development; (5) the demands of society in general and of industry in particular upon boys and girls, this corresponding to the problem of markets; and (6) the question of the cost, which is almost purely a business problem (Munroe, 1912, pp. 20-21).

Following this line of thinking, school was expected to benefit from careful study and systematization of the educational process –if one could make business less wasteful and more efficient via the application of engineering principles then why not education? These ideas circulated in ways that influenced much more than simply the way the field of instructional technology developed.

In 1945, W.W. Charters, a curriculum and audiovisual technology developer (Wraga, 2009), outlined four ways in which education aligned with principles of engineering –which included: a meticulous, thorough and/or step-wise, impartial approach to inquiry; utilization of a scientific approach based in the psychological and sociological behavioral sciences; a forefronting of efficiency –in the form of anything that reduced friction in order to speed up learning; and avenues which delivered *"maximum prosperity"* (Taylor, 1919, p. 9) which in this case meant student growth or other acknowledged forms of educational wealth (Januszewski, 2001).

> The educational engineer is interested in philosophy and theories and the situations from which they emerge, but he studies them to get his bearings to attack a problem. To him the program is the thing. (Charters, 1945 in Januszewski, 2001, p. 69)

From this perspective, education was framed as something that could be literally *engineered* by placing an emphasis on solving problems through detailed programmatic resource usage grounded in the science of organization and learning. Technologies of

education, in this view, were processes that would eventually be seen as entire systems of people, tools, and programs coming together in managed ways to overcome some obstacle or achieve some goal. For some researchers and designers in educational technology, theory and educational philosophy were used opportunistically –not seen as requiring allegiance or mandating specific design decisions. Whether the educational problem was solved via an instructional design which adhered to a particular theory of learning, or a hodgepodge of explicit or implicit theories, or even whether the embedded perspectives on learning could be articulated by the designers was not of great importance in comparison to the thing or process which was created to address the problem and the efficacy with which it did it. When I hear a piece of research get labeled as atheoretical it may be understood as approaching research and design primarily with the goal of designing or engineering a solution to a particular problem. In this context what theory or theories are used, expanded, or created is peripheral to successfully solving the problem. Instead of casting educational technology researchers involved in rapid paper prototyping (Liou, 2007), design-based research (diSessa & Cobb, 2003), or other educational technology endeavors as atheoretical, we might sidestep thinking about it as a theory-rich/theory-lacking binary, considering their efforts in light of the influence of engineering on the field as well as the values and culture from which such *problems* are created/identifiable/positioned.

While an educational engineering approach to learning framed the solution to a problem or the accomplishment of some higher level of efficiency as the primary or end goal of their endeavors, one branch of the *scientific* view positioned educational problems

as an opportunity to increase the precision and predictability of their instructional theories.

> Over the years, educational technologists have used the term ‘reflective thinking’ but they were not often clear about what they meant by the term. Many of the early leaders were interested in generating "scientific" principles that would lead to replicable procedures that could be used to develop instructional methods and materials (Januszewski, 2001, p. 9).

From this science-centric perspective, educational issues or problems were framed as opportunities for improving upon the theories which guided the creation and use of instructional processes or technologies. When the work of educational technology researchers within educational psychology or the learning sciences or other subgroups get labeled as more interested in the theories their designs prove or extend than in the students their designs serve, we might consider their work in light of the influence of science on the field as well as the possible engineering, Deweyan, or child-centered orientation of those doing the positioning.

There were, of course, alternative notions of what an educational science might look like or mean, including those that viewed it as having to do primarily with child development or the Deweyan construct of science as a way to teach reflective thinking skills (Dewey, 2007). Yet, it was a science interested in measurement, in “*systems models, behavioral objectives, and task analysis used in front-end analysis; mastery*

learning techniques and criterion referenced testing; and the highly quantitative nature and design of experiments" (Januszewski, 2001, pp. 9-10) which became largely synonymous with educational science within educational technology despite the warnings of some (Dewey, Ratner, & Post, 1939).

A third influence on the formulation of the field that was to become known as educational technology was audiovisual education –whose professional associations such as the Department of Audiovisual Instruction of the National Education Association made up the early educational technology constituency and whose academic journals, such as AV Communications Review, provided the platform for their evolving ideas. Januszewski (2001) points our attention again to curriculum developers and theorists beginning in the late 1930s.

Hoban and Zisman's text *Visualizing the Curriculum* argues for audiovisual education as a way to improve learning through a dual approach focused on images, diagrams and their efficacious inclusion, they state that *"a vital, realistic, stimulating educational program not only requires the necessary visual aids but the proper use of these materials in instructional learning situations"* (1937, p. 275). In working to understand what the proper use might be, the lead article in the very first issue of AV Communications Review in 1953 called for precision in data measurement with the aim of developing a scientific approach to AV communications based on prediction and control (Saettler, 2000). In large part, the audiovisual community heeded this call, organizing and standardizing its practices so as to *scientifically* maximize the yield of their instructional efforts to engineer educational solutions (Januszewski, 2001).

CASE STUDY IN TECHNOLOGY AND SOCIETY: TECHNOCRACY AND TECHNOPOLY

While some posit that technology is the embodiment of the desires of a society, Postman (1993), among others (Pacey, 1983; Slack, 2005), argues that technology has become more than just another chemtrail into contemporary culture; he asserts that it has become the religion of the modern era. Postman (1993) writes that there have been three different perspectives cultures have held toward technology, each making the design and development of technological tools, processes, and practices more important than the last.

The first perspective, held by most pre-17th century societies, demanded that technologies conform to or generally reside within the bounds of the cultural norms and values of the era and region. One of the ways this expectation was carried out was through the decisions of inventors themselves as well as their financial backers or political allies. For example, despite recognizing the submarine as a way to give the city-state in which he lived a military advantage, Leonardo da Vinci acted on his personal values -keeping the plans to himself, concerned about the "*evil nature of men*" (Misa, 2004, p. 7). The delay in the emergence of Arabic-language printing presses is another example of value-driven decision-making in terms of technology adoption or suppression.

Despite serving as an incubator of civilization and a technology clearinghouse for overland trade routes through the Middle East (Humphrey, 2006), the Islamic theological and therefore, political position, held that since Mohammed wrote the sacred words of the Koran with his hands that this was the proper way for all writing –scribes not printing presses (Goody, 2006; Headrick, 2009). In fact, it is believed that Pope Julius II ordered

the creation of the first Arabic press –realized in 1514. However this press and others like it went unsupported by orthodox Muslims until Mohammed Al-Jalbi secured a ruling from the Ottoman Empire's Islamic high court in 1728 allowing the printing of secular books (Taher, 1997).

Postman (1993) puts forward the idea that most societies up until the 17th century fell under the umbrella of tool-using-cultures wherein technology was meant to serve society within the parameters of its values in day-to-day use as well as in religious (Noble, 1997) or governmental endeavors (pyramids, aqueducts, roads…).

In Europe by the 1600s, science was making noticeable gains with the public through scientifically proven explanations for phenomenon which dispelled long-held stances of the church as to the way the physical world functioned (Olson, 2004). Science, and the technologies it made possible, grew to become an ever-larger part of the answer to the question of society's purpose. This shifted many societies into a *second* type of relationship with technology, one in which technology itself was no longer clearly subservient to societal values. Or rather a key difference between this and the first type of society-technology relationship might be understood to be the way societal values took a technologically-friendly turn –emphasizing progress which meant bigger, faster, cheaper, and then later smaller –all for the benefit of humanity. Technological innovations went from having to pass through the filter of societal values to becoming –under the banner of progress, one of them (Postman, 1993).

The third societal shift for Postman was ushered in by the popularization of Fredrick Taylor's book, Principles of Scientific Management, in which Taylor argues that

the core of business should be "*maximum prosperity*" (Taylor, 1919, p. 9) –marking the beginning of a trend that positions the primary goal of nearly all labor and human thinking as a search for greater efficiency. This search, loyal to its origins in science, begins with a replacing of subjective human analysis with disciplined calculation (Postman, 1993). The mountain of new and ever-expanding knowledge, an orientation toward experts, and a belief in scientific reporting all led to a further entrenchment of science as a religion or belief system with technology as its proof.

What Postman (1993) points out, and others (Norgaard, 1994; Pacey, 1983) have noted, is a societal orientation toward technology and interest in technological progress, an ethos of progress as the one true good whether via new tools, processes, and practices or through increased efficiency. If the innovation benefits the economy, if it expands the human capacity to remain happy and productive, if it is bigger, faster, cheaper, more exact, more convenient, or more interesting then it is not only welcome in society but also a societal imperative –the culmination of our contemporary credo.

Postman's three-stage theory offers a developmental lens for understanding the evolving relationship between society and technology. It suggests how we might make meaning out of contemporary societal proclivities in which people accept data reported out of context, embrace efficiency as an end goal, view quantification as a substitute for human judgment in decision making, and view the current state of things as the pinnacle of human evolution and lifestyle.

Control, measurement, replicability, and predictability were a few of the elements the science of behaviorism promised the field of audiovisual communications in the 1940s, 1950s, and beyond. Drawing upon learning theories steeped in behavioral psychology (Skinner, 1953; Thorndike, 1906), both teaching machines and programmed instruction were developed. Each held the potential to standardize instruction and embody the latest learning theories science had to offer. James Finn, a member of the AV movement who is credited with cultivating a process view of technology (Januszewski, 1996), felt that a focus on the instructional theories and principles behind the programmed instruction and tools they were creating and evaluating would help legitimate and further the field even as it helped raise the profile of technology within educational spaces (Finn, 1960).

> The tendency for technology to have no limits and constantly to extend into new areas, [makes it] inevitable that, in an advanced technical society, technology should begin to extend into the instructional process itself. ... education has been, for a century or more, one of the areas of American society which has walled itself off from technological advances and, consequently, has created a vacuum. That vacuum is now rapidly being filled (Finn, 2000, p. 85).

At the same time Finn had strong opinions about the power of programmed instruction, writing, "*he who controls the programming ... controls the educational*

system" (Finn, 2000, p. 154). McClintock (1971) would later theorize that the psychology of learning enjoys an inflated status in educational research because of the way it aligned with those seeking to control the experience of schooling and the scope and sequence of learning through a focus on effective strategies of teaching. This alignment, he writes, limited learning to what is taught when, historically, it was often thought of as what was studied.

In drawing on the behavioral sciences, those in AV also aligned themselves with a particular type of curriculum-development theory that called for the standardization of educational outcomes affording, *"efficient practical action in a practical world"* (Bobbitt, 1918, p. 3). Bobbitt's call for schooling to include a focus on "*maximal effectiveness"* and *"experience on a work level"* (1918, p. 6) was influenced by Taylor's approach to business management (1919) which was inspired by the director of a military school Taylor attended (Headrick, 2009). This framing of curriculum was further systematized by Ralph Tyler in his book *Principles of Curriculum and Instruction* (1949) which sets forth a four-step process of curriculum development that consists of: identifying the desired educational outcomes, breaking these into experiences expected to realize the outcomes, organizing and sequencing those experiences, and finally evaluating them. The combination of behaviorist approaches to learning and behavioral objectives-driven curriculum development created an environment which supported the creation of programmed instruction. While educational researchers have distanced themselves from behavioral theories of learning, behavioral approaches to curriculum development

continue to thrive –connecting with contemporary task-analysis and instructional systems design practices in educational technology (Januszewski, 2001).

PERSONAL NARRATIVE: CURRICULUM, PEDAGOGY, AND THE PUBLIC SCHOOL

During the five years I spent as an elementary school teacher in Houston Independent School District, I was encouraged, or more accurately, I was expected to view curriculum as a finished product which was mandated by the state, organized in large three ring binders, and passed out to the teachers at the beginning of teacher pre-service trainings. The Texas Essential Knowledge and Skills (TEKS) binder, with its hundreds of objectives per grade level, represented everything students in each grade were expected to learn each year --built objective by objective and standard by standard from kindergarten through twelfth grade. While the 'E' in TEKS stood for *essential*, implying that more could be taught once the essentials were learned, it also placed the contents of the binder before other experiences. As a classroom teacher, I could branch out to other areas just as soon as my students learned the third grade collection of math, science, social studies, health, PE, Spanish language arts, and English language arts TEKS (Texas Education Agency, n.d.). The English language arts TEKS alone were comprised of over 100 student expectations ranging from *110.14.b.1.B.iv* wherein students learn to decode and spell words with 'r' controlled vowels, to *110.14.b.5.B* in which students demonstrate the ability to differentiate between settings in myths and traditional folktales, to *110.14.b.13.C* under which students identify cause and effect

relationships within a text, to *110.14.b.20.A.iii* which requires students to write compositions containing concluding statements at the end of compositions.

I remember a heated meeting with my principal my first year of teaching. She held up my contract and said that when I signed I knew or should have known that part of my job was to uphold and teach the curriculum of the school. I was expected to shrug my shoulders and put my head down along with everyone else and teach to the TEKS –which I did with limited results and mixed feelings. What Eisner (2004) would call the explicit curriculum nullified the chance to facilitate other experiences within the classroom, or at least I felt like any efforts in areas outside the curriculum would be seen as missed opportunities to teach or reteach TEKS student expectations. Over fifty years after it was popularized, Ralph Tyler's (1949) behavioral model of curriculum development was alive and well in the state of Texas. Curriculum, it seemed, was a closed system tightly coupled to a state and then later a national accountability system. If I wanted to innovate and show my creativity, it was to be in the area of pedagogy. For the next nine years, through two master's degrees, four more years of teaching, and half of my PhD coursework, I focused on pedagogy, on the horse race of education and educational technology.

Through work on a paper for a Curriculum Theory course I took during my PhD coursework I had a chance to explore some of the ideas of Pinar, Slattery, McClintock, McDonald, Roy, and Aoki; I began to understand that there were other, more expansive, ways of thinking about curriculum. I learned that Tyler's method of curriculum development was called into question as early as the late 1960s causing a rift in the field

of curriculum. The curricular reconceptualists did not confine themselves to the work of helping the schools develop curriculum for the established domains of mathematics, literacy, science, social studies, and the arts but rather though a reterritorialization of curriculum as historical, social, and contextual, of curriculum wrapped up in how we live, make and construct lives (Pinar, 1995, 2004, 2006) in ways which reinscribed aesthetics, spirituality, and other marginalized forms of thinking and being in the world (Slattery, 2006).

I continue to working to understand how these ideas circulate and influence my work in educational technology research and design. Their presence has helped me widen my view and vary my approach to education in general and educational technology in particular.

TECHNOLOGIES OF/IN EDUCATION CONTINUED

> Technology is not just machines and men. It is a complex, integrated organization of men and machines, of ideas, of procedures, and of management. (Hoban, 1965, p. 124)

Within a few years of the end of World War II, the US armed forces formalized a systems approach to tasks, goals, and endeavors of all sizes –eventually making their way to the AV field (Banathy, 1991; Gagné, 1987). A systems approach situated programmed instruction efforts within a context-inclusive method intended to improve efficiency

through the assignment of clear personnel roles and the development and/or proper utilization of mechanistic and human resources alike (Januszewski, 2001). While some like Hoban (1956 in D. P. Ely & Plomp, 1996) saw a systems approach as a framework for the study of in-place systems, other researchers both before and after Dick and Carey (1978) helped to further popularize it, viewed systems approaches as self-contained ways to design instructional episodes or content-pedagogy-assessment programs (Januszewski, 2001).

The way the systems approach worked to delineate different roles for personnel involved in the functioning of a particular system eventually helped to carve out a niche for educational technologists. Educational technologists would not, in the end, facilitate the delivery of the instruction themselves –that would be the teacher's role –nor would they decide which goals were worth teaching and which objectives would support those goals –that would be the job of curriculum developers. Instead, they would be the creators of the instructional processes of *"analysis, development, implementation, and evaluation"* (Januszewski, 2001, p. 46) that would realize the goals of the curriculum specialists and policy makers (Gustafson, 1986 in Hlynka & Belland, 1991) through the hands or with the guidance of teachers trained in the proper use of programmed instruction (Heinich, 1979) –thereby working with both teachers and specialists and guided by both formative and summative evaluation (Duane, 1973; Heinich, 1972 in D. P. Ely & Plomp, 1996), each member of the group would contribute in a specialized way to the larger system.

> The real accomplishment of modern science and technology consists in taking quite ordinary men, informing them narrowly and deeply and then, through appropriate organization, arranging to have their knowledge combined with that of other specialized but equally ordinary men. This dispenses with the need for genius. The resulting performance, though less inspiring, is far more predictable. No individual genius arranged the flights to the moon. It was the work of organization--bureaucracy. (Galbraith, 2007, pp. 75-76)

Having framed the systems approach as the democratization of innovation, the systems approach became the primary process through which the science-harnessing practice of educational technology was instantiated. While different varieties of the systems approach existed (Bertalanffy, 1969; Dick & Carey, 1978; Saettler, 2000), the approach was usually based on five mostly linear steps consisting of: audience description and general goal/objective externalization; breakdown of domain-specific behaviors; redefinition of instructional objectives; creating evaluation frames; and testing those frames (Hoban, 1975 in D. P. Ely & Plomp, 1996; Januszewski, 2001). Additionally, though some saw a systems approach as an organizational blueprint for program creation –evoking a science-aided *engineering* mindset, others saw the creation of a program as a way to calibrate the nuances of the systems approach leading to ever-more exacting *science* of systems design (Januszewski, 2001).

CASE STUDY IN TECHNOLOGY FRAMES: TECHNOLOGY-AS-PROCESS

Viewing technology as a process enables it to be studied and understood in a wide array of the forms. It can be embedded: within a physical structure –as is the case with the mechanical printing press as well as today's digital devices; it can be contained within a resulting artifact –like an ear of corn or a striped tulip; or the process can simply exist within a framework of ideas upon a predominantly abstract plane of calculation – producing constructs that elude concrete embodiment altogether but create a range of very real possibilities. Some examples of this would be: the assignation of numerical values to student thinking (begun at Cambridge University in 1792) (Postman, 1993), the emergence of the scientific method as a generalized means of overcoming a range of socio-scientific problems (Headrick, 2009; Misa, 2004), and the economic concept of distributed ownership and futures markets.

These last two examples of economic process technologies still in use today are credited with contributing to the golden age of the Dutch Republic and two of the factors credited with helping secure its identity as the first modern economy (de Vries & der Woude, 1997). The technology-as-process or practice view allows us to see tools and the artifacts tools produce, as well as more abstract processes, as interconnected types of technology shaped by networks of societal forces, existing tools, and past techniques.

> We will now consider iron, the most precious and at the same time the worst metal for mankind. By its help we cleave the earth, establish tree-nurseries, fell trees, remove the useless parts from vines and force them to rejuvenate annually,

> build houses, hew stone and so forth. But this metal also serves for war, murder, and robbery; and not only at close quarters, man to man, but also by projection and flight; for it can be hurled either by ballistic machines, or by the strength of human arms or even in the forms of arrows. And this I hold to be the most blameworthy product of the human mind. (Pliny the Elder 78CE in Klemm, 1964, p. 51)

Through this quote above, we can understand that technologies, even seemingly invisible processes and advances in iron mining, refining, and smelting, formed an interconnected network influencing the range, cost, and extent to which iron would be pressed into service (Headrick, 2009), which in turn recursively impacted the society it served through subtle, dramatic, and *blameworthy* changes in human practices (Pacey, 1983).

From this perspective, Dutch technology was peerless in the 1600s. Their approach to soap, beer, and paper making as well as tobacco and dye processing, whale oil and sugar refining, ship building, diamond polishing, and optical lens grinding allowed them to import modestly priced raw materials and export high quality finished goods -often selling these back to the country which supplied the raw materials (Misa, 2004, p. 51; Price, 1974). The *invisible technology* (Postman, 1993) of distributed ownership, a process which enabled ships, shipping cargo, and tulip bulbs to be partially owned by more than sixty people, allowed the middle class to invest in markets that had previously required a level of risk and initial investment beyond their means.

Standardized distributed ownership connected these markets to an expanded pool of investors –creating economies that could rapidly scale (Misa, 2004). Consistent returns in the shipping trades and domestic flora markets led to larger pools of investment capital as well as the emergence of insurance and futures trading based on market speculation.

Technology-as-process, practice, or cultural residue resonates with the etymology of the word *technology*. First used in its current form in 1615 (Barnhart, 1999) its history connects with notions of weaving, and building via the Indo-European root *tecks,* and the Greek root *teche* meaning craft or skill –especially in the practical arts such as engineering or architecture (*Merriam-Webster online dictionary*, 1991; Shipley, 1984). Weaving, craft, and skill all imply processes of assembly, or treatment based on knowledge.

TECHNOLOGIES OF/IN EDUCATION CONTINUED

> Educational technology is a field involved in the facilitation of human learning through the systematic identification, development, organization and utilization of a full range of learning resources and through the management of these processes (Ely, 1972, p.36 in Januszewski, 2001, p. 49)

In 1972 the Department of Audiovisual Instruction, a conglomerate of AV associations which first came together in the 1930s (Saettler, 2000), changed its name to the Association for Educational Communications and Technology. The moniker

educational technology stuck, becoming the most frequently used term to describe the field (Saettler, 2000). 1972 also marked the first time the group referred to itself as members of a *field* in its definition. Doing so enabled the inclusion of different theories of learning, design, and material delivery –prompting discussion and debate. The name change also allowed for both product (tool, hardware) and instructional process under its umbrella -giving concrete examples of what it was (Januszewski, 2001). Other changes or shifts were also taking place during the 1970s which were reflected in the way members in the field spoke and wrote about what educational technology meant to them.

The word *control*, which was prominent in the 1963 definition, was replaced with the word *facilitation* which reflected a shift away from a highly behaviorist perspective of how people learn (Januszewski, 2001).

The use of the word facilitation instead of control also acknowledged the existence of differing opinions as to who should decide when and how technology was used. While Robert Heinich (2004) advocated placing decisions about the use of technology in the hands of the curriculum specialists, Kenneth Silber (1972 in Januszewski, 2001) pushed to give some decision making power to the learners. In line with Illich's (1972) call for technologically-enabled webs for learning, collaboration, and connection, Silber's *Learning System* consisted of an environment wherein educational technologists would create a range of materials and programs from which learners would select, modify, and/or use to meet their needs –with their teacher acting as a Deweyan facilitator (Saettler, 2000) instead of the primary source of information. While Silber's learning system would have been difficult given the limited access classrooms of the time

had to an adequate range of materials and programs, today such an experiment might be somewhat more possible given the proliferation of online materials, programs, environments, and user forums.

Along with the linguistic move away from *control* and *programmed instruction* in the educational technology definition, concepts of designed and appropriated resources for learning, and a systems approach to development continued to influence the field. While not a new idea, the construct of personalized education increased in prominence during the 1970s. *Personalized* and *individualized* instruction had two different meanings at the time, one which forefronted personalized approaches to content delivery and another focused on individualizing the learner's experience based on need, interest, and/or potential (Gagné, 1987; Januszewski, 2001).

In the first, pace and entry point were the key factors allowed to vary between students. Personalized programmed instruction often took the form of booklets with study guides and was meant to reduce teacher load as well as maximize student growth (Gagné, 1987). Mastery learning also gained an ally with this type of personalization as self-paced instruction often focused on getting it right with time being the elastic instructional factor (Duane, 1973; Januszewski, 2001). Januszewski (2001) identifies the four principles which characterize this type of instruction as: learning strategy to learning style alignment; content type and level to student readiness fit; appropriate entry point for each learner based on prior knowledge and self-pacing thereafter; and additional support when needed. While popular, these types of approaches required a great deal of resources

before a single student could begin using the instructional materials.

> Individualized instruction requires ample lead time to convert traditional instruction to the individualized format. It requires almost inordinate amounts of time for staff planning. It requires budget which realistically face the problems of supplying adequate quantities of well-designed and validated materials. It demands logistics to uncomplicate the flow of people and materials. It demands an evaluation system which systematically gathers data about successes and failures. (Duane, 1973, p. 200).

The other type of personalized instruction for individual development required very little in the way of initial planning as the curriculum was expected to grow out of the interests of each learner. One example was William Kilpatrick's Dewey-inspired *project method* (Kilpatrick, 1918) which was a forerunner to Silber's Learning System. Kilpatrick felt that instead of instructional technologies bent on efficiency, the key to education was the facilitation of different types of learner-generated *"wholehearted purposeful act[s] carried out amid social surroundings"* (1918, p. 5). He endeavored to see school and content from a student's experiential perspective –encouraging reflective thinking and problem solving in areas of student interest with the teacher acting as a facilitator. Kilpatrick, in opposition to Bobbitt (1918), argued that education was a part of the life of a student, not preparation for a future life. *"As the purposeful act is thus the typical unit of the worthy life in a democratic society, so also should it be made the*

typical unit of school procedure" (1918, p. 6). While Kilpatrick traces his project method through Dewey's ideas of science and education as built upon modeling and facilitating habits of mind that help learners solve problems, Dewey himself felt that Kilpatrick's method left too much up to the child often resulting in projects which only superficially connected with established domains of knowledge (Westbrook, 1993).

From a learning resources point of view, personalized education in the spirit of Kilpatrick's project method could only be systematized at the administrative and macro-planning levels –requiring curricular and instructional resources to be appropriated based on each student project. In contrast, individualized programs, which afforded students as much or as little time as they needed to learn a prescribed turn-key curriculum, relied heavily on specifically designed programs and materials to control most of the curricular and instructional aspects. It would be this *designed* type of individualization that was most often realized and forefronted in discourses of technologies of education in the early 1970s and for decades to come.

CASE STUDY IN TECHNOLOGY: PROGRESS, MANIFEST DESTINY, AND PROGRESSIVISM

The Western or Judeo-Christian idea of a manifest destiny is, in some circles, credited with turning "*the natural sublime of the American landscape ... into the modern technological sublime*" (LaFreniere, 2008, p. 289). This perspective on progress frames subduing or conquering nature through technology use and development as part of the duty of humanity –with technology becoming both the means of dominance as well as

proof of superiority, providing a rationale for the domination itself.

> The destiny of man is to possess the whole earth; and the destiny of the earth is to be subject to man. There can be no full conquest of the earth, and no real satisfaction to humanity, if large portions of the earth remain beyond his highest control. Only as parts of the earth are developed according to the best existing knowledge, and brought under human control, can man be said to possess the earth. (Widtsoe, 1928, p. 138)

From irrigation in Mesopotamia (Willcocks, 1917) to the Roman aqueducts (Singer, 1978) to the Hoover and Three Gorges dams (Winchester, 2004), we are encouraged to view technology as an exciting, sometimes perilous journey toward mastery, progress, and escape.

> The idea of Providence is now considered quaint while the idea of control is so strong in parts of the West that the occurrence of misery or early death are viewed as a matter of social and scientific inadequacy (Norgaard, 1994, p. 51)

Gilbert LaFreniere (2008) organizes discourses of societal progress into different strands of progressivism starting in the 18th century; these include scientific, millenarian, developmental, and utopian forms. He outlines scientific progressivism as a cautiously optimistic belief in and adherence to the scientific tenants of objectivity and logic.

Millenarian progressivism, which includes scientific progressivism as but one avenue to progress, makes an assemblage out of humankind, casting humanity as a sort of evolving, improving, progressing entity with Western elements at the leading edge (Nisbet & Stone, 2001). Utopian progressivism acknowledges the currently existing positive and negative elements of a society and, often through technology, strives to correct or *"set things right"* (LaFreniere, 2008, p. 162) by working to push society toward an ideal vision of the future. Developmental progressivism, LaFreniere (2008) writes, is more conservative, a kind of extrapolated trajectory based on current conditions which maintains elements of the status quo –lest attempting to realize a utopia requires undue sacrifice or loss of status.

Whether technology and technological progress in society is framed as a societal imperative (Postman, 1993), a moral duty (Widtsoe, 1928), or a particular form of progressivism (LaFreniere, 2008; Norgaard, 1994), the way discourses of progress guide decision making and frame how events are interpreted can offer insight.

For example, communication and transmission methods have increased in diversity, reliability, and bandwidth even as their cost declined precipitously –a private three minute transatlantic phone call (New York to London) which cost $300 in 1930, cost $20 in 1970 thanks to the emergence of transistors in the late 1940s –allowing electronics to be smaller, require less electricity, and, once they were combined to form integrated circuits, doubled in computational capacity every 18 months for the next seventy years –reducing the cost of that same international phone call to as little as $0.03 in 2007 (Brock & Moore, 2006; Headrick, 2009). We could align these developments in

circuitry and communication creating the possibility of networked computing machines we use daily and their downward cost trajectories –with the IBM System 360 being built for the US government and large corporations at a cost of $5,000,000,000 in 1964, coming down in price by 1975 when build-it-yourself computer kits were available in the US for $400 and soon thereafter, pre-assembled personal computers from Apple, IBM and a host of clone PC manufactured machines entered the market (Ceruzzi, 2003; Headrick, 2009).

By 2007 that same three minute transatlantic phone call could be made for $0.03 (Headrick, 2009; Huurdeman, 2003). Through the lens of millennial progressivism, we might understand the combination of relative affordability in terms of both communication and computing as a central enabler of an information age (Headrick, 2009) wherein anyone with access to three cents can connect with someone an ocean away.

That the developments mentioned above offer certain affordances is certainly difficult to deny. However the cost of those affordances is often less widely explored much less publicized. For example, the aftermath of the Second World War saw German, Russian, and American scientists in the war effort, architects of some of the most destructive technologies ever devised, maintain their status after the war and continue their work in the United States, Russia, France, Spain, Egypt, and Argentina (Gimbel, 1990; Schiff, 2008). It was these scientists, and specifically navigational, rocket and communications technologies that helped usher into existence intercontinental nuclear missiles, space travel, modern computing and with it, the possibility for global networks

of telecommunication satellites (Headrick, 2009). Do we frame their contributions as evidence of: the folding of societal values, the most efficient path to progress, or simply people who made the best out of the situations in which they found themselves? Are we to see their actions as the politically indifferent march of science or might we label all participating scientists and modernity in general as culpable for failing humanity?

What do discourses of progress circulating in our schools make possible? Which perspectives circulate easily, which struggle?

TECHNOLOGIES OF/IN EDUCATION CONTINUED

As the level of technology saturation or presence in society grew, the idea that learners have the right to use technology to learn began to intensify (Hoban, 1968 in Januszewski, 2001). By 1977, the highly inclusive nature of the 1977 educational technology definition subordinated the fields of curriculum, teaching methods, and administration, leading Paul Saettler to term it an "*omnibus definition*" (2000, p. 6). Instead of being one of several primary concepts, the systems approach had grown to become educational technology's anchor (Hoban, 1996). The ascendency fit with the idea of educational technology as a process in that a systems approach could also be viewed as a process. Learning resources, development, and management were now supporting elements within the educational technology definition –with *development* meaning a systems approach to development and management being the management of the systems approach (Januszewski, 2001).

The construct of *development* was an umbrella term for instructional design, instructional systems design, and many other similarly-named varieties of instructional development. Jorgensen (1981 in Januszewski, 2001) traced six different areas which influenced the growth of instructional development; these include 1) audio-visual, 2) behavioral objectives, 3) sciences of communication and control, 4) various areas of psychology, 5) management science, and 6) programmed instruction.

Seen as defining, developing, deploying, evaluating, and improving instruction, instructional development was written about as both a professional activity producing classroom-ready materials and a discipline which explored the efficacy of different development models (Reigeluth, 1983). A number of different instructional development models had been created by researchers in the field of educational technology to help capture the internal processes (Dills & Romiszowski, 1997). Of the different models, the Instructional Development Institute or IDI model, based on the Hamerus model, was one of the most influential in the 1970s. Developed collaboratively by four different universities, it stressed a team-based approach to development bent on addressing problems faced by public school systems with limited means and modest expertise with which to address them on their own. The IDI model also included a way to recycle or scale-up the instruction for use in other contexts and school systems (Januszewski, 2001).

Educational technology, which had once confined its efforts to the inclusion of appropriated audiovisual materials was according to the AECT's 1977 definition, *"an extensive analytical framework that was intended to systematize the entire educational process"* (Januszewski, 2001, p. 101).

It was seventeen years before the AECT's Definitions and Terminology committee published an updated definition of their field. While committees of nearly two decades prior made distinctions between the terms *educational* and *instructional* –seeing instructional as a more structured subset of education, the committee in charge of the 1994 definition acknowledged that *educational* and *instructional* were used synonymously in the educational technology literature. Moreover, since the term *instructional* was more popular in the United States, reasonably inclusive, better able to articulate the function of technology in educational spaces, and afforded a focus on learning and instruction, it was favored over *educational* technology.

> Instructional technologists, as a community of professionals tend[ed] to value concepts, such as: replicability of instruction, individualization, efficiency, generalizability of process across content areas, detailed planning, analysis and specification, the power of visuals, benefits of mediated instruction (Januszewski, 2001, p. 107).

Yet, by the 1990s, what was included in the construct of *instruction* was expanding. Behaviorism as a psychological theory had been relegated to the background –largely required to influence the field via the layers of residue built into systems, models, and experiences during its many years of dominance. Cognitive approaches to learning, in part initiated by Whitehead's (1967) call for instructional episodes to help learners grasp the content not via a step-wise tour of its micro component parts but rather

through its larger context –using the metaphor of seeing the wood *"because of the trees"* (1967, p. 6), began to exert more influence over educational technology. Whitehead's ideas about the inert nature of traditional instruction eventually served as a catalyst for instructional development efforts such as the Jasper Series (Cognition and Technology Group at Vanderbilt, 1992) which situated instruction within meaningful contexts, bridged disciplines, and focused on problem solving (Regian & Shute, 1992). Others in the field combined systems design with cognitive theories of learning to model, predict, and influence the structure and flow of understanding by using problems in the field to first match student responses and actions to *buggy* models and then lead the student toward expert models of a particular domain or process –giving programmed instruction a new avenue in the design of instructional systems –of which the Cognitive Tutor (Corbett, Koedinger, & Hadley, 2002) is an example.

Similarly, the *"challenge of constructivism"* (Hackbarth, 1996, p. 11) entered and altered the educational technology landscape –offering several ways of understanding learning as both individually and socially constructed experiences (Phillips & Soltis, 2004). Influenced by Piaget's work, Ernst von Glaserfeld (1996) wrote about the variance with which individuals understand the outside world. While Glaserfeld shared both cognitive psychology's focus on the individual and a bias for active engagement in knowledge building, he was skeptical of the predictive and diagnostic mental models of cognitive theories of learning (Phillips & Soltis, 2004). Experience, he posited, was unique to each individual –making it the only substance upon which every being capable of experience could construct their own version of reality (Glasersfeld, 1996). This

radical view of knowing and learning created challenges for those who saw educational technology as the design and development of instructional systems,

> constructivism holds that there is never only one right way, it [can] not produce a fixed teaching procedure. ... constructivism cannot tell teachers new things to do, but it may suggest why certain attitudes and procedures are fruitless or counter-productive; and it may point out opportunities for teachers to use their own spontaneous imagination (Glasersfeld, 1996, p. 177).

Thinking of the work of educational technology as the engineering of instruction or scientific theory refinement flew in the face of constructivist theories of understanding which resisted prescriptive instruction and celebrated spontaneous action and the imagination.

Still other constructivist thinkers were skeptical of the lack of attention paid to the role of social groups and context in collective and individual learning processes. Understanding and the process of coming to know, they argued, was something that took place not in *a* head but in many heads and between heads (Phillips & Soltis, 2004), with tools, in physical places, and during particular moments. The anthropologist Clifford Geertz wrote, *"as culture shaped us as a single species --and is no doubt still shaping us-- so too it shapes us as separate individuals"* (2003, p. 52). John Dewey, long before the rise of constructivism, stated,

> every individual has grown up, and always must grow up, in a social medium. ... through social intercourse, through sharing in the activities embodying beliefs, he gradually acquires a mind of his own. ... the self is not a separate mind building up knowledge anew on its own account (1916, p. 344).

Additionally, Lev Vygotsky's ideas about the importance of students not only knowing the names of things but also having an opportunity to experience concepts and reach their potential in supportive social contexts also influenced constructivist thinking (Hedegaard, 2005; Phillips & Soltis, 2004). As Dewey stressed the community of school, and Vygotsky –the presence of more knowledgeable others, Lave and Wenger developed an understanding of learning, first via traditional apprenticeship as a model, then in terms of the way learning was situated within a social context, and finally, framing learning as one element of social participation,

> in contrast with learning as internalization, learning as increasing participation in communities of practice concerns the whole person acting in the world. Conceiving of learning in terms of participation focuses attention on ways in which it is an evolving, continuously renewed set of relations (Lave & Wenger, 1991, pp. 49-50).

By 1994 the scholarship and resultant AECT definition of educational technology showed inclusiveness to alternative perspectives of not only how people learn but also

epistemology, and the meaning of curriculum (B. G. Wilson, 1997). The construct of educational technology was no longer a single theory of communication as it was during the early 1960s, nor was it the omnibus theory of instruction, curriculum, and administration it was in the late 1970s, developments in the way learning was positioned, curriculum was re-understood (Pinar, 2004), and the very nature of knowledge (M. A. Peters & Burbules, 2004) afforded those in the field of educational technology myriad ways to experiment.

> Contemporary curriculum studies has been a turbulent and discontinuous field. Many scholars strive to reexamine the field through their own interpretive analyses; in so doing, they all bring "new" theoretical and practical frameworks into curriculum discourses and make us rethink curriculum and ourselves as educators (Apple, 1979, 1986; Cherryholmes, 1988; Doll, 1993; Eisner, 1979; Eisner & Vallance, 1974; Hlebowitsch, 1997, 1998; Hwu, 1998; Jackson, 1992; Pinar, 1988, 1998; Pinar, Reynolds, Slattery, & Taubman, 1995). (Hwu, 2004, p. 181)

It is somewhat ironic that educational technology, a field which prides itself on being within the vanguard of change, suddenly appears instead to be lagging behind other fields and disciplines. While these other fields have been already spent a decade or more questioning and exploring genuine research alternatives, educational technology appears to have become stuck fast in a technological, means-end model which goes by a variety

of names including the systems approach, instructional development, instructional systems design, or just plain educational technology. Inquiry in the context of this positivistic conception of the field seems to be limited to formal experiments which seek to provide information which would predict and control the learning outcomes from technologically-based instructional systems (Hlynka & Belland, 1991, p. v).

What the mid 1990s and early 2000s also offered was a line of every faster, more capable, colorful vehicles for the delivery of their experiments educational technology. VCRs, laser disks, computers, and later networked applications, streaming media, and mobile technologies proliferated along with the expansion by inclusion enjoyed by the educational technology field. Perhaps it was the pace of advancement, the proliferation of new electronics which contributed to the horse race orientation Zhao and his colleagues (2002) lamented earlier in this chapter as taking the focus away from larger contexts. In many circles, the construct of *technology* had become synonymous with electronic devices. Within this perspective education's role was to bend these devices toward the aims of education –research consisting of comparing these new devices to other technologies or *traditional instruction* which, while a technology of education in itself, was often framed as non-technological.

> Defining educational technology as a process resulted in a tension or dissonance between the popular notion of technology as state-of-the-art equipment and the older idea of technology as a process. (Januszewski, 2001, p. 118)

CASE STUDY IN TECHNOLOGY: TECHNOLOGY-AS-TOOL

> Humans are not the only creatures that use tools; chimpanzees, vultures, sea otters, even insects will sometimes pick up a twig or a stone and get at food. Only humans, however, could not survive without tools, and only humans have been shaped by the tools they use. (Headrick, 2009, p. 1)

> Embedded in every tool is an ideological bias, a predisposition to construct the world as one thing rather than another, to value one thing over another, to amplify one sense or skill or attitude more loudly than another. (Postman, 1993, p. 13)

On February 12, 1637, in what was one of the most colorful financial bubbles in Western history, Dutch tulip grower Wouter Winkel sold three tulip bulbs for a combined sum of 9,200 guilders –roughly the equivalent of two townhomes in downtown Amsterdam (Misa, 2004). This sale and others like it in early February of 1637 pushed the tulip market to its zenith. These delicate, disease-shaped flowers which first grew wild in the Turkish and Central Asian highlands and went on to become as collocated with Dutch culture as dikes, windmills, and orange-jerseyed footballers, were a European floral oddity in the seventeenth century introduced by Dutch diplomats and naval officers returning from Turkey and the Middle East. By May of 1637 the illusory bubble burst and tulip prices and the corresponding financial aspirations of the growers, merchants and

craftsmen invested in them, plummeted (Goldgar, 2007; Misa, 2004; “Tulip mania,” n.d.).

Figure 4: An example of a highly sought after bulb from the period.

As we have seen, what falls within the leaky category of technology depends upon how the construct or idea of *technology* is framed. In other words, which of the available social and historical narratives are used and which are ignored make a difference. The Dutch hoe, for example, used in weeding and soil turning in tulip beds, is part of a network of technologies which follow a historical descendance of iterative tool creation and improvement which made the cultivation of surplus edible plants possible – enabling the cultivation of flowering plants as well. The development of these stone, wooden, and later metal tools, of which the Dutch hoe is a member, helped initiate a transition from horticulture to agriculture that can be traced to before 3000 BCE

(Headrick, 2009). The technology-as-tool definition of technology often positions mechanical and electronic implements as apolitical (Buchanan, 1965; Pacey, 1983) technologies created with particular affordances (Norman, 2002) yet without any claim to embedded societal values within the design. This perspective, that technologies are objects, only as good or bad as their users' intentions, is identified in contemporary narratives about technologies as well as more nuanced discourse about raw materials and the tools which they make possible beginning at the very dawn of the Common Era as the following quote from Pliny the Elder demonstrates.

> We will now consider iron, the most precious and at the same time the worst metal for mankind. By its help we cleave the earth, establish tree- nurseries, fell trees, remove the useless parts from vines and force them to rejuvenate annually, build houses, hew stone and so forth. But this metal also serves for war, murder, and robbery; and not only at close quarters, man to man, but also by projection and flight; for it can be hurled either by ballistic machines, or by the strength of human arms or even in the forms of arrows. And this I hold to be the most blameworthy product of the human mind. (Pliny the Elder 78CE in Klemm, 1964, p. 51)

While recent communications technologies have led to a reduction in technology-related skepticism (T. P. Hughes, 2004; Meehan, 2004), viewing human-built devices as only as innocent or dangerous as the humans controlling them is rhetorically

advantageous. Consider the way nuance has waned in a few well known cases. Ultra-potent intercontinental nuclear missiles are categorized as *defense* measures (Rhodes, 2007) and a recent National Rifle Association campaign appears to argue for the neutrality of weapons technologies when it posits "*Guns don't kill people, people kill people*" (Henigan, 2009).

TECHNOLOGIES OF/IN EDUCATION CONTINUED

Binary approaches as to what counts and doesn't count as technology, and taxonomies of technology and progress –which place different device permutations on a historical continuum or within a matrix, can offer insight into how we might make sense of technology as a cultural form. However adopting one or multiple perspectives and then adapting or viewing fieldwork experiences through those lenses threatens to predetermine the meaning one makes. While an awareness of multiple frameworks or lenses is useful, deciding in advance to employ a particular frame may tempt the researcher to take analytical shortcuts (Stewart, 1996) instead of engaging with the non-empty societal contexts. Certainly the idea is not to resist the making of meaning, nor is it to demonstrate that any perspective is as good or bad as the next, rather it is to suggest that more meaning is made in description than one realizes, furthermore delaying the decision to use a particular framework buoys the reader's ability to make meaning, and expands the potential for experimentation via different frameworks or lenses—shifting the meaning that can be made –vigilant to the sort of observational-theoretical myopia Stewart describes (1996, 2008). Viewing technology as value-free tools, as the progeny of

brilliant minds, as practices, or the march of societal progress need not compete in a zero-sum-game for hegemony, instead, when the need for a single framework fades, the shifting, dynamic, nuanced way of meaning making might become available. Certain perspectives will, at times, become more plausible than others, yet there is strength in the ability to sink back into educational technology as an assemblage on the move, an expanding universe, a leaky cultural form, a residual, rhizomatic, societal chemtrail, a web of evolving, interrelated practices between the moments of meaning making.

While the processes, the tools, and the individuals who create and wield them give us insight into ways technology influences and is shaped by society, it is when we weave elements of these perspectives together that we begin to sidestep oversimplifications in our understanding of technology. This inclusive perspective positions technology-infused historical moments such as the invention of *movable type* within a rhizo-temporal network of tools, processes, and practices connected to current forces, past events, and desire –creating leaky cultural forms such as *technology*, and *educational technology*. Through this swirl of forces and connections we can connect agricultural, governmental, educational, and economic (Goldgar, 2007; Misa, 2004) technologies. By connecting the Dutch Hoe with agricultural innovations stretching back to Egyptian and Sumerian tools (Headrick, 2009), or in connecting humans using sticks in the dirt or pictograms etched in stone with the Gutenberg Bible and the standard QWERTY keyboard, we can make meaning out of present actions. We can follow lines of flight through moments of interest up to the present-day –as one might do in connecting ancient line making, with records of harvest yields in Egypt, with movable

type, with Jan Amos Comenius' language learning textbook, with FunWritr or the very research you are currently reading.

CASE STUDY IN TECHNOLOGY: APPROPRIATE TECHNOLOGIES

With the *appropriate technology*, Al Fritsch and Paul Gallimore (2007) write that they can heal Appalachia and, later, other parts of the world. Big energy in the form of the coal, oil, gas, and nuclear conglomerates they say, have stifled renewable energy development on a large scale so the authors unveil the results of 30 years of testing in Appalachia to identify four criteria that make a technology *appropriate*:

- *Affordability*: the technology must be available without the purchaser/assembler going into long term debt and also maintainable without expensive upkeep or fuel costs. Highlight text and click the Bullets button on the Formatting toolbar.
- *Earth-friendly*: the technology does not put pressure on the environment through its construction, use, or disposal.
- *Community enhancing*: either in its construction, maintenance or benefit derivation the technology contributes to the well being of those other than its owner.
- *People friendly*: similar to Banham's back porch technologies (1999), these items can be assembled, used, and maintained by people with basic levels of skill and education

Fritsch and Gallimore (2007) go on to organize technologies into those that are good for all (many), good for some, good for none. Within the 'good for some' category

there are differentiating layers including: regional/local specificity, cultural specificity, and personal specificity that help to determine for whom a particular technology might be appropriate.

TECHNOLOGIES OF/IN EDUCATION CONTINUED

The mid 1990s saw expanded ways of understanding the process of learning and coming to know, and the late 1990s and early 2000s have yielded a proliferation of networked and social technologies, yet as unprecedented as these new opportunities might have been they were met by societal discourses of efficiency and accountability that proved quite potent themselves. While multimedia technology and later network technology made the realization of Silber, Kilpatrick, and Illich's (1972) radical ideas about the how learning, education, and schooling might be organized, at this same time, discourses of standardization begun in the 1980s with the Reagan administration's Nation at Risk report (National Commission on Excellence in Education, 1984) and continuing through the high stakes testing mandates of No Child Left Behind act, exerted pressure to enlist a homogenized, technocratic approach to teaching and learning that emphasized the attainment of predictable outcomes. Most US public schools maintained their use of Tyler's interpretation of curriculum development and most educational technologists took a service-oriented or means-ends approach to their creative work (Hlynka & Belland, 1991). Despite the expansion of theoretical, epistemological, and technological flexibility, US schools most often sought incremental improvements –preferring to tinker

with or add structure to existing framework in hopes of attaining the educational gains which would cement national dominance.

CASE STUDY IN DESIGN AND LITERACY: ELECTRACY

> Technology is something that arises wherever there are human beings living together in societies. Power too has been present in all known human societies. Both are, like language, endemic features of the human condition. ... There is no experience of technology that is not at the same time an experience of a kind of social power. (Kirkpatrick, 2008, pp. 1-2)

In the book Electronic Monuments, Gregory Ulmer (2005), writes about borrowing some of the lessons learned in design while sidestepping the design imperatives of economic viability, and generalizability. Ulmer admits that internalized narratives of improvement drive him to design art, monuments, and other things – acknowledging that what he designs may do more harm than good. His post-enlightenment approach does not seek to overturn modernist/literate ways of knowing –as they are good for the individual, rather he supplements modernist texts with a sort of literacy which combines textual elements with elements of entertainment and advertising in a way that requires an awareness of societal and technological meta-narratives. Ulmer identifies three different ways of knowing: 1) Oral, intended for family life –positioning religion as the solver/resolver/instigator of society's problems, 2) Literacy, conveyed

through school and read as progress –forefronting science as the solver/resolver/instigator of society's problems, and 3) Electracy, whose vehicle is the flash of passing images – offering entertainment as the answer to and instigator of society's problems.

TECHNOLOGIES OF/IN EDUCATION CONTINUED

Researchers and developers in educational technology have, through their own definitions, terminology, and efforts, gone about the business of creating instruction supportive of education based on explicit, testable, behavioral objectives. Technologies of instruction grew up with behaviorism as the dominant theory of learning. When cognitive theories of learning began gaining followers, its proponents partially shifted the orientation of instructional development from an information-focused perspective to a mental-model and problem-centered one. Constructivism pushed educational technologies to downgrade the dream of turn-key or prepackaged instruction only to have that same content repackaged within a microworld where the path was less defined but the content still fairly prescribed.

Figure 5: Screenshot from the Tactical Iraqi Language and Culture Training System.

Three hundred forty-one years after *Orbis Sensualium Pictus* and a hemisphere away, the University of Southern California –with $45 million dollars in seed money from the U.S. Army, founded the Institute for Creative Technologies. The institute marked the convergence of the military, academia, and the entertainment industry (T. P. Hughes, 2004). Together with USC's Information Sciences Institute ("AI: Artificial intelligence research at USC's information sciences institute," n.d.), the Institute for Creative Technologies has produced educational language learning technologies that extend Comenius' model for combining images, text, and learner actions (Johnson & Wu, 2008). One result of the above described collaboration is an approach to language learning called the Tactical Language and Culture Training System (*Tactical language and culture training system - demo video*, 2008).

The first two applications to be developed by the system, Tactical Pashto and Tactical Iraqi, were developed to train US combat troops to carry out military missions in Afghanistan and Iraq with better linguistic and cultural awareness (Chatham, 2008), teach language skills, offer games to help them practice, and include virtual-reality military-simulations complete with text-to-speech & automatic speech recognition, artificially intelligent Pashto or Iraqi-Arabic speaking avatars, guide avatars, drop-down menus for emoting culturally-appropriate gestures, and rapport meters that go up and down based on the cultural appropriateness of the learner during his or her '*mission'* such as a house-to-house search for enemy combatants or communication-establishing café parlés with the local elders.

Given the experience of wayfaring through this chapter what meaning might we make? How could this experience be pressed into service? We might:

- marvel at how far educational technologically has come in the last 450 or so years –going from a book with woodcut black and white images to a virtual-reality, AI-infused environment that resonates with the post-instruction goals of the learner,
- shake our heads at the idea that some of our most extensive, as well as expensive, educational technology efforts result in simulations that reduce culture to clicking on the correct gestural icon and prepare military personnel to better carry out their aims,
- notice just how similar the two are in terms of the way they each:
    - determine and supply the content,
    - offer the content in ways deemed compelling for their era, and
    - situate the learner as bringing awareness

- think about just how long rich media has been a part of the learning experience – at least for some students, and
- wonder what a group of unfunded graduate students can accomplish on their own.

SUMMARY

> As a result of investigating the deliberations behind the educational technology definitions, the modern fog of unity, inevitable progress, and stability fades away. When the air clears, we see that people and their ideas changed with time, technologies, funding, events, and context. (Yeaman, 2001, p. viii)

One of my goals for this chapter is to perform a sort of wayfaring within the literature of and about education, technology, and society. There is nothing particularly quintessential about any of the asides or case studies, there is no quote that could not have been left out, no irreplaceable historical element or technological example. This is not to suggest that I went about the writing of this chapter haphazardly or that I took the organization of this chapter lightly, on the contrary I hope it is clear that I went to reasonably studious lengths to write, organize, and position it. Part of that positioning is an effort to perform a type of pseudo-serendipitous scholarship. By not marking the bounds of my theoretical territory but rather using history and the theories of others to craft a particular form of address I hope to have justified my particular approach to this topic while implicitly demonstrating the potential of my research to contribute *"something new."* (Hart, 1998, pp. 1-2)

Figure 6: Word cloud of all text in chapter 2.

Chapter 3 Methods

Much of life, including the life of institutions as well as our personal lives, may be fragmented and incoherent, but we desire patterns showing continuity and we search to find them. (Yeaman, 2001, p. viii)

The practice of social science from Sigmund Freud to Max Weber, Karl Marx to Margret Mead is documenting the behavior and feelings of people as they confront problems posed by their culture. (Postman, 1993, p. 153)

The splintering of science has altered the goal of research. Scholars no longer legitimate their work through appeals to their participation in the quest for scientific knowledge. Their goal is now 'performativity' rather than 'truth'. ... The question is no longer 'Is it true?' but 'What use is it?' And the question of usefulness means either 'is it salable?' or, in the context of the focus on power, 'Is it efficient?' (Grenz, 1996, p. 48)

One of the comfortable delusions in educational technology is that one can become a scientist by taking a sequence of courses in methodology and statistics. (Hlynka & Belland, 1991, p. 11)

NEW ETHNOGRAPHY, NEW ETHNOGRAPHIC WRITING, AND WEAK THEORY

> I wrote my way into particular spaces I could not have occupied by sorting data with a computer program or by analytic induction. This was rhizomatic work (Deleuze & Guattari, 1983) in which I made accidental and fortuitous connections I could not foresee or control. (Richardson & St. Pierre, 2005, p. 970)

> Both a social researcher and a novelist give unique interpretations to a set of human events and support their interpretations with examples in various forms. Their interpretations cannot be proved or disproved but will draw their appeal from the power of their language, the depth of their explanations, the relevance of their examples, and the credibility of their themes. (Postman p.154)

> Scientific inquiry is the same in all fields. Scientific research, whether in education, physics, anthropology, molecular biology, or economics, is a continual process of rigorous reasoning supported by a dynamic interplay among methods, theories, and findings. It builds understandings in the form of models or theories that can be tested. Advances in scientific knowledge are achieved by the self regulating norms of the scientific community over time, not, as sometimes believed, by the mechanistic application of a particular scientific method to a

static set of questions.

(National Research Council (U.S.), 2002, p. 2)

Over the past four years I have spent hundreds of hours observing students, their teachers, administrators, parents and aides interacting within elementary and middle school classrooms. Whether as the principal investigator or a hired laptop, the research has focused in some way on educational technology. From motivation in a problem-based-learning, space-science program, to personal epistemologies and their influence on technology use in language arts contexts, I have worked to better understand how to communicate with cultural forms that include, if not forefront, computers, their software, network connectivity, peripherals, the discourse that surrounds them, the processes that make them possible, and the individuals that design, support and use digital technologies. I have endeavored to better understand the partially holographic nature of these cultural forms, and in doing so –along with help from some working at the peripheral center of ethnography and experimental writing (Foley, 2002; Pollock, 2006; Richardson & St. Pierre, 2005; Sedgwick & A. Frank, 2003; Stewart, 1996, 2005, 2007; Taussig, 1993), I began to notice the way identifying a group of interactions or happenings as part of a theoretical framework or perspective threatened to create a kind of seductive numbness to the raw, repetitive, haptic, haphazard way certain moments get thrown together (Stewart, 2008). Numbness because adopting a theoretical or classificatory framework pushed me to read moments and actions through a particular lens which often inscribed preemptive meaning on the events I observed. Seductive because connecting the dots between

experience and theory felt like progress –a signaling that the search for meaning might now give way to the construction of warranted (AERA, 2006) implications. I'm not suggesting that experience and theory are rarely in confluence, rather that pressure to find or produce meaning out of experience might lead to a sort of academic slash and burn research practice wherein local ways of knowing and meaning making are cleared away to create room for foreign or abstracted ways of understanding.

Drawing heavily from Stewart's work on cultural poesis (2005), weak theory (Sedgwick, 1997; Stewart, 2008) and 'ethnographies of experience' (1987, p. 28), I suggest that attending to and wondering about where these moments might lead –re-presented through the vehicle of new ethnographic writing –offers educational technology researchers an opportunity to employ a mode of attention that is less likely. Less likely to careen past moments of cultural production, less likely to interpret moments of poesis as some subset of 'systemic effects imposed on an innocent world' (Stewart, 2008, p. 73), and less likely to view observed interactions between students and classroom: computers, LCD projectors, smart boards, iPods, ELMOs, and iPhones from an artifact-centric perspective. This less-though-still-multiply-colonized way of broadly attending to and wondering about the contexts wherein digital technologies emerge, or don't, or just threaten to emerge over the course of several school years or a single random moment –offers the potential for a proliferation of ideas and insight. This epistemological/axiological willingness to view inquiry into digital technologies not as an exercise in radial mapping from a technological center or learning-objective core –but as a diffuse, shifting assemblage among diffuse and shifting forces, factors, and feelings

circulating in educational contexts affords educational technology researchers an opportunity to think differently about the process and prospects of inquiry itself. This mode of attention and subsequent interest in evocative re-presentation seeks to welcome researchers, classroom teachers, technology designers, policy makers, parents and casual readers into classrooms and onto campuses –offering each a chance to come away with their own insights and ideas about: what happened, how it felt, what it means, what to do about it –if anything, and how to proceed –while simultaneously disorienting, fragmenting, questioning, and reorienting the researcher's path to over-arching pattern identification and meaning attribution.

It was Yanchar, South, Williams, Allen and Wilson's positioning of theory within the field of Instructional Technology (Yanchar, South, Williams, Allen, & B. Wilson, n.d.), Jonassen's incredulity toward learning theory unification (2003), Deleuze and Guattari's (1983) call for experimentation, and Stewart's description of moments where things seemed to pile on, sag, or straighten up –leaving a residue of legibility behind, that led me to wonder what weak theory and new ethnographic writing might yield when applied to an early participant-observation episode from a technology-focused study of practices, discourses, epistemologies and classroom technology use.

Could I press the data into service, not by arranging it into defensible organizational categories but through a willingness to imagine and follow any number of lines of flight (Deleuze & Guattari, 1983)? Could I write it up in a way that was poetic and weakly theoretical, a performance of things flowing and stuttering, of things doubling back, doubling over, or moving sideways (Lather, 2007; Stewart, 2007) while still

addressing social-science-since-Plato's call for contribution (AERA, 2006; Plato, 1888)? What might initially resisting the ingrained urge to posit significant, defensible findings reciprocally supported by a theoretical framework through early, iterative, layered classification (AERA, 2006) yield and what might experimenting with greater attention toward affect, toward the press of forces before they are labeled (becoming categories, patterns and power) make possible? What sort of an object might we get when the urge to bend what we experience back toward meaning and unity (Aristotle, 1934) is interrupted? What would the product of such a process look like? How would it feel to read the paranoid elements of social science discourse included at 11 point font, and how would the writing be read within a field working to identify patterns, develop theory, analyze impact, and design solutions? This is where my experiment with weak theory (Sedgwick, 1997; Sedgwick & A. Frank, 2003) and educational technology began.

Zapata elementary is a research site but it is more than a place to collect my data. It is a place to continue participating, to follow lines of flight (Deleuze & Guattari, 1983) and cultivate the affinities we share for certain in-progress outgrowths of past participation. I am still primarily following my interests, however, the shared experiences, conversations, and plans allow me to follow those interests in ways that are participatorily purposive –creating arrangements where respondents who are not only full of information (Patton, 2002) but also already interested in similar issues and working toward resonant goals.

In the ethnographic case study, The Pull of the Earth, Laurie Thorp writes:

> There is no getting around it; participatory research takes time, more time than the machinations of academia will usually tolerate. Time, my time, is what the teachers have requested as they become engaged in this project. The teachers do not want or need more lesson plans, worksheets, guidebooks, or curricula; they yearn for deep lasting relationships in the classroom and across those borders into community and into our colleges and universities. (Thorp, 2005, p. 144)

Through my participation at Zapata –with ethnographic attentions, I have maintained and intensified connections and ongoing conversations over multiple school years. Zapata represents/ed a chance to experience and witness (Behar, 1996) in a place where I felt welcome, where the students recognize/d me and the teachers and staff nod/ded to me in the halls. It is a place where I felt best equipped to follow through and find out something about what's going on telling stories about how things unfolded at Zapata in terms of:

- educational technology use in the classroom,
- the people and spaces,
- one particular hardware introduction,
- an online educational technology application, and
- something not unlike ethnography and new ethnographic writing's role in educational technology research.

METHODS SECTION

In weak theory, the point is not to predict what might happen but constantly remind one's self as a researcher that there is much more going on than research methods can capture or a theoretical framework can bring into focus. It reminds us that what is often referred to as contextual noise includes a myriad of potentials. Not *'a'* correlation or *'the'* emergent findings or what *'it'* means as if traversing a logical, arborescent spine from bud to branch and trunk to taproot, but rather a combinatorial journey of possibility from shoot to stem, from stem to rhizome, from rhizome to tuber and back again along the same path but on a different trajectory and at a different velocity. Garver uses Faust for some perspective, "*Gray, my dear friend, are all theories, And green the golden tree of life*" (Garver, 2008, p. 64). By resisting strong (Tomkins, 1965), colonizing or paranoid (Stewart, 2008) theories, New Ethnographic Writing, coupled with weak theory, seeks to let some of the greenery we notice but cannot categorize and make sense of using traditional research methods leak out into our knowledge projects and onto the pages of our re-presentations of experience.

This is not to say that the best efforts of academia are to be eschewed in favor of what social science might disregard as anything-goes conjecture. Rather it is an attempt at challenging the construct of *educational technology* through various devices meant to disorient the reader (Stewart, 1987). It is my hope that by offering lengthy sections of experience written in literary ways which outrun simple explanation packaged in distance-giving academic language, while still, in sections, presenting histories, local epistemologies, social realities, and academic discourses that point toward some of the

perspectives and meta-narratives that circulate in the space as well, not in a effort to pin down what *it* means, but rather to perform a certain scholarliness which I hope might approximate some of the *"real conceptual work"* of which Sedgwick (1997, p. 15) writes –highlighting *"the cultural field that the ethnographer writes as broadly composed of radically contingent, omnipermeable, micro- and macroperformances"* (Pollock, 2006, p. 325) while giving the reader handholds for meaning making on the rock-face of ethnographic experience.

The exploration of this methodological and analytical move comes on the heels and in the footsteps of anthropologists creating ethnographies that resist giving in to pressures to identify, construct, and present cultural forms as 'wholes' –unpacked as if observed from 10,000 feet above and written up to read like a movie played with the director's narration dominating the cast dialogue.

New Ethnography or New Ethnographic Writing is a process of narrative creation, built out of the researcher's extended personal experiences within an environment, written in a way that is accessible to the public and pertinent to academics (Goodall, 2000). It is a process that seeks not to *get it right* but rather strives to get it variably nuanced and contoured. This writing up of the observational data involves a concerted effort on the part of the researcher to resist and delay the assignation of meaning to the objects of inquiry, attending to their particularities instead of scanning past them based on presupposition or theoretical logics (Stewart, 1996). Moreover, this type of writerly poesis performs the powerful tensions that circulate amidst what is scientifically knowable and elements that resist knowing or explanation but remain quite real (Stewart,

2007). Stewart (2007) argues that by simply deploying '*prefabricated knowledge*' about our ethnographic object(s) we risk a type of observational, interpretational, and analytical glaucoma, where the more we focus on the meaning we ascribe to the patterns we observe, the harder it is to see past them and back to the press of forces that make up moments that feel like an event. The will to find meaning, to make a certain number of observed events, taken from a larger pool of collected moments, *mean* something is a necessary and unavoidable part of qualitative social science research yet the way it is enacted often fails to resonate with the "*stories, tangles of associations, accrued layers of impact and reaction*" (Stewart, 2008, p. 72) that get lost, overlooked, or over-categorized in the push to understand, write it up, and get it out.

This type of inquiry is less about merging traditional qualitative analysis with more literary forms of expression than about reorienting the field to research, realized through writing, that takes pains to present an ethnographic object with much of its cultural illegibility or polysemy intact. As Stewart (1996) demonstrates, moments of ethnopoesis, local epistemologies, histories, and academic theories can indeed circulate within a text –and should as they course through the research experience. Foley too, though in a different way and on a different scale writes "*personal encounters*" of "*more fact than fiction*" (Foley, 1995, p. ix) within the "*postmodern era of anthropology*" (1995, p. 204). From these and other examples I look to find, or using Lather's (2007) or Thorp's (2005) notion *lose,* my way among personal, historic, societal, and academic discourses, trying out modes of address and processes for making meaning out of the experience and the experience of making it mean (Lather, 2007). Crotty (1998) states that

each piece of research deserves a unique approach to data collection and analysis. Inasmuch Goodall (2000) charges each New Ethnographer with the task of wending their way through, around, and out of the gap between embodied experience and textual re-presentation as they construct an interesting conversation with their readers –the product more interpersonal communication than speechmaking –more impressionistic than realist in terms of its portraiture (Foley, 2002) –more akin to literature than academic text in its flow, word choice, register, and epistemology.

Weak Theory, through the vehicle of New Ethnographic Writing, allows researchers to participate within educational contexts and share the experience with others in educational technology and education in general without restricting the research product to the established guidelines for social science (AERA, 2006). It allows researchers to communicate and interact in an expansive space – not eschewing the (post)modernist knowledge project but slipping between some of its strictures (AERA, 2006) –alerting the reader of other ways of attending (Stewart, 2007), of an accrual or cultural accretion that hangs together but is not defensive or paranoid (Sedgwick & A. Frank, 2003), of other ways of coming to know.

This is not to say that strong or predictive theories and the societal meta-narratives they produce, reinforce, or contradict are not useful, even necessary, for the health of the field and the learners we serve. Instead I suggest the utilization of New Ethnographic Writing as an experimental, rhizomatic move toward expansive possibility, a non-adversarial, non-linear, non-paranoid way of suspending –if even for a few

moments, pages, or chapters, the steady march of (post)modernist, educational technology research as we know it.

Applying these ideas to educational technology research allows me to make a sideways move in social science's version of theoretical chicken. I can continue to work toward a better understanding of 'x-about-y-within-z' while simultaneously acknowledging my inability to definitively articulate 'x-and-y-and-z' –understanding the precarious relationship between our inquiry and the strong theories upon which we build our academic arguments and careers (Pollock, 2006).

Educational technology researchers employ emerging and established theories of: design, cognition, social interaction, motivation, institutional change, pedagogy, gaming, gender, and language learning in efforts to improve and expand educational outcomes. Through the use of weak theory and new ethnographic writing, our conclusions and findings may or may not shift dramatically, our peers may or may not initially recognize such endeavors as research, but attending to the shifting moments of accrual and piling on of things that precede the meaning our methods make possible, our field expects, and our research organizations require, affords us an opportunity to notice cultural legibilities otherwise occluded from our methodological sight. It invites us to think differently about the role of theory in the inquiry we both consume and produce. It exposes us to the idea that "*what life adds up to is a problem and an open question*. …[things] *don't add up but are always threatening to*" (Stewart, 2008, p. 72). By racing to produce knowledge we risk missing out on the chance to engage the open questions of our research environments, we risk missing out on the chance to engage with the problem of learners,

teachers, administrators, technologies and the artifacts they produce in different even whimsical ways.

Asking where weak theory might take us is like asking where a moment in a classroom might take the teacher intern, the administrator, a fifth grade teacher, a third grader, or a researcher. It is not about constructing and defending an analytical citadel of triangulated prediction but rather an exercise in bouncing among local extrema, not in a search for a solution, but in an effort to appreciate the subtle power of culture and the re-orientational potential creativity and imagination offer the field of educational technology research.

RESEARCH DESIGN

> Sure, go ahead and prepare your research design. Plan away. But my advice, don't hold on too tight. Constructivist/phenomenological methodologies require a certain spaciousness of thinking that allows for things to emerge on their own terms. Oh sure, we can review the literature and find those that have tromped this ground before us and conclude that things will go this way or that. Theories abound. Conclusions, too. Hitch your wagon. But in the end, let the kids or the teachers or the spawning salmon or whatever your 'subject' have their way with you; be present to their every word and wiggle. Pay attention. Resist that pressing urge to make sense of it all, to impose your questions, categories, and order too soon. (Thorp, 2005, p. 117)

> A sentence functions very much like a machine, and this is nowhere more obvious than in the sentences we call questions... Questions, then, are like computers or television or stethoscopes or lie detectors, in that they are mechanisms that give direction to our thoughts, generate new ideas, venerate old ones, expose facts, or hide them. (Postman, 1993, pp. 125 & 127)

> To elicit the laws of history we must leave aside kings, ministers, and generals, and select for study the homogeneous infinitesimal elements which influence the masses … this is the only path to that end and … the human intellect has not, so far applied one millionth of the energy which historians have devoted to describing the deeds of kings, generals, and ministers. (Tolstoy, 1982, p. 977)

> All too often scholarly rigor is identified with the consistent application of a single method. To the extent that one method is interrupted by others, especially by anything that involves actually talking with people, it is at best eclectic; worse: diluted, a puddling mess. (Clough, 1998, p. 326)

As I stated in chapter one, over the course of several years I have asked some form of the ethnographic question, '*What's going on [at Zapata Elementary]?*' (Wolcott, 2008) or '*How will things unfold [at Zapata Elementary]?*' (Thorp, 2005) in terms of:

- educational technology use –especially during language arts, literacy, and ESL interactions,

- the introduction of a set of iPod minis in two different classrooms and one group's attempt to introduce an educational mashup (Liu et al., 2008) we designed (Olmanson et al., 2010) to serve as:
    - a bridge between classroom goals and proponents of emerging technology integration in schools (Greenhow et al., 2009),
    - a bridge between traditional notions of curriculum (Tyler, 1949) and reconceptualized ones (Pinar, 2006; Roy, 2003),
    - a means of experimenting with the use of ethnography in design-informing educational technology research;
- the use of ethnography and new ethnographic writing in educational technology research –as a way of understanding complex contexts in general as well as what it might bring to design endeavors.

Through this inquiry, I attend to the interactions, histories, and epistemologies of people (including myself), artifacts (including one which I have had a hand in creating), movement, and contexts (mostly within Zapata elementary school) which are in some way connected to educational technology.

While more open-ended than many educational research questions, the above framing, given my temporal commitment to Zapata elementary and methodological plan of observation, participation, and inquiry affords me the reasonable expectation of being capable of both describing the experienced interactions and positing different ways these interactions might be understood or made to mean (Wolcott, 2008).

Over the course of the research experience I engaged broadly –eventually tracking through inquiry and, highlighting through writing (Clifford & Marcus, 1986) –particular moments and interactions, at the expense of other moments and interactions (Burke, 1935, p. 70). How particular moments, events, or pieces of data were arranged and written up is described at the outset of chapter four involving writing, organizing, reading, rewriting, reading, rumination, tracking, and listening. As others who draw on writing and composition to guide their work (Pollock, 2006; Richardson, 1998; Richardson & St. Pierre, 2005; Stewart, 2007) I have used it to influence mine in selecting certain portions of expanded fieldnotes, memos, interview transcripts, historical, and theoretical assemblages to create an uneven fit with one another. Such a process, I hope, allows me to tell stories of my experience (Foley, 1995) among teachers, students, administrators, and other researchers in a way that critiques monolithic interpretation, forefronts interpretational polysemy, and portrays moments of coming together (Stewart, 2008), of rupture (Cary, 2006), of beginnings, and of exit without overly essentializing them or romanticizing my role (Wright, 1977).

The following types of data were collected and to some extent used in the creation of the following chapters: (a) field notes from participatory observations of: (i) students and teachers in classroom settings esp. language arts, ESL, and social studies settings, (ii) teachers and administrators talking about education, literacy and technology; (b) audio recordings of: (i) students and teachers using technologies in literacy and language development settings; (ii) student interviews; (iii) teacher interviews; (iv) administrator interviews; (c) student artifacts; (d) campus and district technology and learning-related

memos, technology inventories, instructional planning guides and policy documents; (e) mass media and academic discourses of learning, language arts and social studies topics; (f) files, guides, marketing and reviews of available district and campus learning software esp. language arts and social studies software; and (g) newspaper and other media articles about Zapata elementary.

The ethnographic research methodology I used extend practices begun within the field of educational technology (Barab et al., 2004; A. L. Brown, 1992; Collins et al., 2004; DBRC, 2003) and, pursuant to my subject matter interest, has recently enjoyed a heightened profile within the field of language and literacy research (Bishop, 1999; Coiro, Lankshear, & Leu, 2008; Conteh et al., 2005; Greenhow et al., 2009; Mallette & Duke, 2004; Reinking & Bradley, 2007).

I have drawn on ethnographic research methods—primarily participant observation (K. M. DeWalt & B. R. DeWalt, 2002; Spradley, 1980), with interviews (Weiss, 1994; Wolcott, 2005), some artifact collection (LeCompte & Preissle, 1993), and field journals and analytic memos (Emerson, 1995). To the extent possible, these methods have been informed by work in New Ethnography (Goodall, 2000; Pollock, 2006).

I have followed and expanded upon processes that I have developed via a mixture of course readings, researcher dialogue, and professional experience. Of the different data collection methods, fieldnotes either taken during observational episodes in the form of jottings (Emerson, 1995) or a posteriori (Stewart, 1987) have served as my main source of data. By going beyond detached observation (Spradley, 1980), beyond surveys, test

scores, and attendance records, I have committed to a form of participatory involvement and interactive inquiry (Vasudevan, 2006) into the changing, nuanced literate landscapes of the classroom, the school, and beyond. In doing so, I have been often placed in contexts where jotting something down in the moment becomes impossible. As Laurie Thorp (2005) writes in her ethnography about a gardening project on a school campus, it's not as easy as asking participants to tell stories in an interview. It's about being there, being part of the story, about witnessing (Behar, 1996).

One of the elements I have come to embrace and appreciate about the version of New Ethnography I am experimenting with is the way the process maintains only leaky distinctions between experience and writing. My experience of being there, faintly captured in jottings, those jottings expanded in a keep-the-fingers-moving (Goldberg, 1990) way that focuses on the details without regard for organization, linearity, or temporality, more elaboration, some organization, constantly testing it by reading it aloud, getting the dialogue right, weeding out words that collapse my experience into useless adjectives, and listening to others react to having read it are all part of a writing process that never seems to have started with a blank page. In writing up the experience as a strain of New Ethnographic Writing, I gave myself permission to let go of the will to cover ground or remain on an acknowledged analytical path from the beginning. The connections I make and the trajectories I follow become part of an experimental writerly, scholarly, something not unlike ethnography. I gather these elements, the comments of those involved—many of whom graciously read versions of the proceeding chapters, and

ideas from peers in academia, I looked at what literary devices have worked for others in New Ethnography, and I experimented.

I am still experimenting with how to layer all these elements in a text. This is not the final project, but it tilts in that direction. I have used mainly expanded fieldnotes written up in a literary nonfiction, wayfaring, style. In some places and with caution I have used local and larger histories; personal/participant ways of knowing; district, campus, and societal metanarratives; historic and contemporary academic perspectives; and aesthetic, rhetorical, and personal [authorial] implication (Wright, 1977).

Field data collection and observations took place over a period of several years. During this time due to district and personal limitations I spent an average of two days per week observing language arts, social studies, computer lab and center time in two bilingual, and two ESL/'regular' classrooms as well as the library. I conducted informal and semi-structured interviews with students in each of the observed classrooms, and the teachers in the observed classrooms, the campus technologist, literacy specialist, librarian, district instructional technologist, and other campus personnel. I spoke with several of the classroom teachers and the librarian during and after my time in their classrooms about what was happening and what they felt it meant (Hatch, 2002; Lincoln & Guba, 1985; Talburt, 2004) to review, encourage, or complicate the ongoing analysis and findings.

While new ethnography and new ethnographic writing described above is the primary means of data arrangement, authoring, and composition, I have also embedded a section of more traditional qualitative data analysis and writing experimenting with a

form of post-compositional iterative analysis (Anfara, K. M. Brown, & Mangione, 2002) including coding and pattern variable identification and theory development based on a constant comparative analysis of events and interactions (Strauss & Corbin, 1998).

I have described the member checking I have done above (Talburt, 2004). It has taken the form of asking participants to respond to what I have been thinking about in informal conversations, to what I have written, and how I have written and organized it. The overlapping data sources, these conversations and checks, as well as self-reflexivity demonstrate, in my opinion, a satisfactorily adequate level of what educational research calls *credibility* or *trustworthiness* (AERA, 2006). Similarly this research, I believe, satisfies the construct of *verification via triangulation* standard as per Creswell (1998 in Anfara et al., 2002). Throughout, I have worked to re-present events and moment through spaces and interactions that do not create a binary or singular interpretive thrust therefore, I will posit that this research meets Talburt's (2004) call for identifying incongruous and conflicting events and perspectives in research in the social sciences.

The purpose for this added experiment is to give me another way of experiencing analytical processes more in line with traditional qualitative educational research practices while at the same time offering the reader an opportunity to revisit a more traditional form of qualitative research in a posteriori juxtaposition to and embeddedness in new ethnographic writing.

RIVERS OF CALCITE

During my dissertation proposal, I was asked how I would go about my work. How would I choose and write up the moments out of the hundreds of hours observing and interacting with students, teachers, administrators, computers, library books, hallways, and aides? How many moments was I planning on using?

Eight, I had said. I would re-present eight different moments. The number at the time was arbitrary but received nods and chuckles by the committee and fellow students at the proposal meeting. While the number was a placeholder, I kept it as a goal that felt manageable, lucky, and potentially large enough to help me sidestep pressure to offer up moments that were in some way quintessential. I thought of these eight moments as a chance to explore notions of difference and repetition (Deleuze, 1994).

I thought about multiplicity—ideas about how, through attention to the play of human activity, written moments might perform or provoke a sort of joyous, even comedic creativity (Thrift, 2008) –slipping into the places and planes where science, chasing after social practice, could not follow (Gadamer, Weinsheimer, & Marshall, 2004). I was hopeful that among the handful-and-a-half of such promised moments, legibilities would rise, Derridian *events* (Clark, 2003), and Deleuzian *encounters* (Deleuze, 1994), instances of entanglements (Thrift, 2008), and/or impacts felt, of buildup, of partial escapes, and glancing blows (Stewart, 2007). I was hopeful the experience of reading the writing might make project worthy of the moments I selected, crafted, and re-presented (Deleuze & Guattari, 1983).

In working to identify five additional moments to go along with *Finding Zapata Elementary, FunWritr: Beginnings,* and *Blanca and the Golem*, I printed and organized my fieldnotes and interview transcripts into three three-ring binders. I carted these around with me to the gym, to my windowless GRA cubicle, and to the university museum reading room. In each space, I read and reread my fieldnotes and interview transcripts, jotting notes in the margins.

I started a table that turned into an attempted spreadsheet that almost was converted into a database before I abandoned it. I numbered each fieldnote and, in moments of anxiousness, nearly yielded to the practiced comfort of creating base codes and just going from there.

Tabling these avenues, I located several packets of sticky notes and fished an orange colored pencil out of the bottom of my backpack. I re-read each entry, adding its number to a sticky note along with any description, feelings, or dialogue that stuck out about what I wrote and/or remembered over that day or my movement through that day. Re-reading them, I added thoughts to the sticky notes and drew a filled-in circle, its size roughly proportional to how well I thought it might work as one of the eight moments I would write up.

I arranged and rearranged these sticky notes on open walls and desk spaces where I studied and worked. Ranking candidates based on my feelings of their *eventness-potential*, certain moments/days felt like they'd have the biggest affective impact. However, over several days of alternating between reading, organizing, walking, and

playing basketball, I started to feel like other more expansive groupings of several dozen moments fit better and held more writerly possibilities.

Some notes fit together. Not like a key in a lock, but somewhat like flagstone in a patio or, better yet, like the rivers of calcite that bind and color the flagstone (or better still flagstones bordered above ground and crisscrossed below by wild rhizomatic grasses). I began writing and rewriting, describing interactions, movement, locations, artifacts, and sequences; responding almost involuntarily (Clark, 2003) to this possibility, creating a network of description to see where it might lead, where I might take it, and how the reader might respond to such a text. An incomplete text. A descriptive text, whose ratio of participant voices to data analysis is the inverse of most educational technology research. A writerly text which, through accrual via experiential accretion, produces an experience ill-suited for academic appetites bent on consuming toward referendum along a readerly spine of mission, methods, data, analysis, and [future] trajectory (Barthes, 1974) but equipped to spawn insight. A shifting text with no bulleted list of findings but with multiple impacts and resonances between and among school years, participants, artifacts, and places. A poetic text wherein the performing of it holds insight beyond intended meaning (Gadamer, 2000 in Gumbrecht, 2004). A holographic text that invites partial readings even as it presents readers with repeated sections. An active text *in which the reader is no less centrally involved than the [author] and those of whom [he tells]* (Agee, 1965, p. 9) without the promise of an actionable center. An experimental text most supportive of readers interested in noticing how it is *working* and what it is *doing* more so than those awaiting *the climax of the analytic treatment* as if it

were *a momentous insight into the abyss of the Real* (Žižek, 2008, p. 81). And so, following an ethic of wayfaring—explained at the beginning of the next chapter, I begin.

SEE ALSO

Finally, texted, stylized, excerpts of societal discourses about technology, inquiry, and educational mostly taken from television advertisements, *raw* data excerpts, and other notes and text have also been inserted, without explanation, into the text. They are not meant to represent the quintessential discourses, data, or notes which circulate within the pages of the sections of new ethnographic writing but rather by accrual to lend a certain residual intelligibility or legibility. This element was inspired by novelist Douglas Coupland (1995, 2006) who includes similar sections or pages in his fiction writing about technology and culture.

SUMMARY

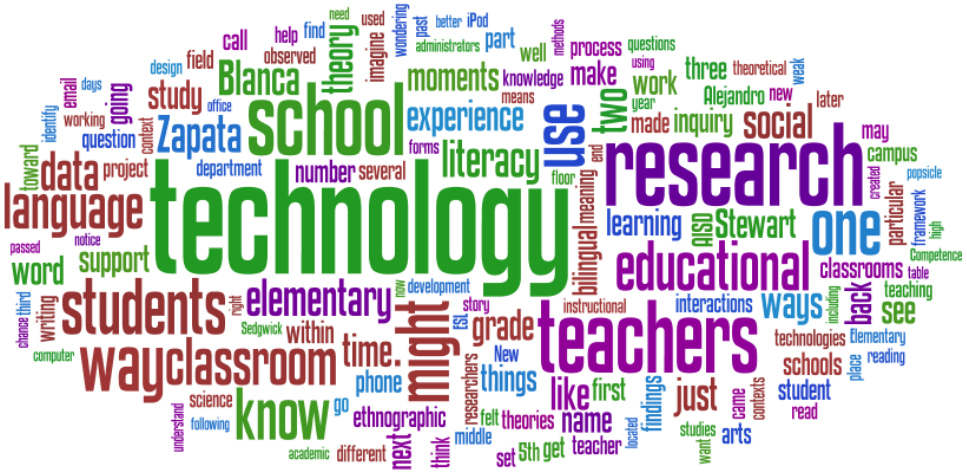

Figure 7: Word cloud of all text in chapter 3.

Chapter 4 Data, Analysis, Writing, and Something

They believed the social to be always already there at their disposal, where as the social is not a type of thing either visible or to be postulated. It is visible only by the traces it leaves (under trial) when a new association is being produced between elements which themselves are in no way 'social'. (Latour, 2008, p. 5)

You can't think, okay, I need an angle and try to manipulate the writing system. Writing is smarter --and bigger-- than you. Also slipperier. Don't think you can catch the process in your hand and contain it. (Goldberg, 2009, p. 44)

In order to see a gradual dawn of regularity come to order, and logic in social phenomena, we must go outside of the details, which are essentially irregular, and rise high enough to obtain a panoramic view of the general effect; that the source and foundation of every social coordination is some general fact from which it descends gradually to particular facts, though always diminishing in strength; in short, that man acts but a law of evolution guides him. I hold the contrary, in a certain sense. (Tarde, 1907, p. 160)

The cracked crab that I recall having for lunch the day my father came home from Detroit in 1945 must certainly be embroidery, worked into the day's pattern to lend verisimilitude; I was ten years old and would not now remember the cracked

> crab. The day's events did not turn on cracked crab. And yet it is precisely that fictitious crab that makes me see the afternoon all over again (Didion, 2006, p. 103)

> a means of celebrating the joyous, even transcendent, confusion of life itself (Thrift, 2008, p. 255)

A MAP

Figure 8: Example of a flagstone patio with grass and earth between.

In *Lines: a brief history* (Ingold, 2007), the author delves into the changes and multiple perspectives associated with lines in the form of tracings and threads, inscription in the form of marks upon stone, upon a page, in the sand, and those left by the flight of birds. By the end of the book, the reader has followed a somewhat meandering tangle of ideas and ways of thinking about lines that lead to and support his argument, in parallel

with Olwig's thesis (2002), that there are three types of lines: straight lines of transport, dashed lines of transport, and free-flowing, crisscrossing, intuitive lines of wayfaring. Modernity, they write, uses the straight lines of transport in aligning and containing their grand narratives within a framework of efficient movement between points wherein the act of movement is discounted or ignored and the arrival and nodal quality of the place is dominant. In this sense, lines are containers and the world they work to contain is a utopian one in which we improve and move forward into progress via incremental, measurable gains in understanding. Strains of postmodernity, far from being portrayed as opposite or contrary to modernity's straight lines of transport, are positioned as similar in the sense that they too move efficiently and with often systematic purpose from node to node along a dashed line from rupture to rupture within the molar/categories of the dominant. The third type of line are lines of wayfaring which are seldom straight or efficient. Wayfaring lines position trajectory as a cauldron of becoming, of multiple possibilities based upon a coming together of many different elements all meeting upon the same plane. *Life will not be contained,* Ingold writes, *but rather threads its way through the world, along the myriad lines of its relations* (2007, p. 103).

The sections below, called lines, each suggest a way through an assemblage of written-up, re-presented, experiences at Zapata Elementary in a chronologically sequenced and loosely themed way. Each line, named and numbered, crosses over or converges with other lines in at least one segment. Each segment, named and introduced, connects in some way to every other segment. One section, the Comenius Line, incorporates two segments of more traditional qualitative research within it. Furthermore,

each line is preceded by a flagstone—grass map (Deleuze & Guattari, 1983) and a metro line graphic in juxtaposition. In re-presenting experience, *rendered meaningful not by grounding empirical particulars in abstract universals but [via a] something in the experiential world [that] forces us to think* (Semetsky, 2005, p. 89), I work to pay attention to the oft-neglected grass in between, running underneath, and up against the recognized discourses/flagstones of the field. The project, thusly organized, performs a tension between a desire to wayfare and an articulated expectation that I scaffold the experience.

In addition to the above explanation, chapter five is also meant as a scaffold for readers. However, should the various lines, segments, paragraphs, and phrases below in chapter four work for the reader, then it *could make reading[chapter 5] unnecessary* (Deleuze, 1994, p. ix).

LINE 1 FADELL

Figure 9: Map of sections in the Fadell line.

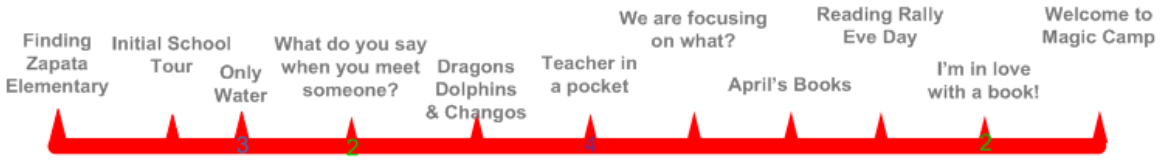

Figure 10: Alternative map of sections in the Fadell line.

Finding Zapata Elementary

Zapata elementary is located one mile south of the Capitol and one mile east of Interstate 35. The neighborhood is a mix of houses, apartment complexes, repair shops

and brick buildings with bars in the windows and the words ‘for lease’ and ‘for sale’ written in black spray paint on the street-facing walls of the mostly empty retail spaces. Having spent five years teaching in Houston ISD, the sixth-largest school district in the United States, I felt drawn to pursue the opportunity to conduct my research in a district that, within a reasonable geographical area, would somewhat approximate my HISD experience. Additionally, I was interested in working with a heavily bilingual/bicultural population of students and teachers as that also mirrored my teaching experience and research interest. Here I relate a story of how I came to conduct my pilot research at Zapata Elementary and explain why I will continue there for the dissertation.

It took me ten minutes to find Cindy N's office after arriving at district headquarters located at 1111 West 6th street in downtown Austin. Several lettered buildings make up the administrative complex. I parked in the visitor area and headed straight for buildings A and B -both modern multistory structures with elevators, conference rooms and a skyway in between. Feeling pretty sure that she was in room 350 or 450, I rode the elevator up to the fourth and then down to the third floor of building *A* searching the listings located just outside the elevator for Cindy’s name and office number. I was about to make my way to building *B* when three people carrying legal pads and empty coffee mugs came around the corner. I waited for a break in their discussion of who had made the most valid points in the meeting from which they had emerged. Did they know where to find the office of External Research? Two of them shook their heads; the shorter of the two leaning forward to press the up button for the elevator, the third suggested I try building *D*.

Cindy's workspace was indeed located in building *D* –squished in on the second floor, accessible via a flight of external concrete stairs, through a door at the end of an outdoor hallway, opening onto a hodge-podge of departmental cubicles including Substitute Services, Special Education Records, and the Internal Audit and External Research departments. The floor was anchored by the walled offices of the network support center and a computer lab for Lotus Notes and SASI training.

We were meeting to go over my application to conduct research in her district. Cindy had concerns including the matter of locating a willing campus. First the principal, then the teachers and finally the parents and students would require convincing of the tangible gain they would come to enjoy as a result of participation.

> Although graduate work is (in large part) supposed to contribute to the literature, **administrators will base their approval on whether or not they can see a practical benefit in participating**. As the proposal reads now, the benefit or contribution to the practice of teaching (both to [the district] and the individual participants) is hard to see behind the academic jargon and esoteric objectives. Can you more clearly identify the direct benefits to the practice of teaching? That is, if you were going to "pitch" your project to a teacher or a student one-on-one, what would get him or her excited about participating? (personal communication, September, 28, 2007)

As I entered the second floor office space I compared each person I passed on my way to the reception and sign-in area to my preconceived image of Cindy. I expected a near- retirement, rule-oriented bureaucrat with a low center of gravity and at least one unevenly coffee-stained tooth. Her office, I thought, would probably house several stacks of over-stuffed file folders, a picture of a portly husband and high school aged son or if divorced –a picture the son alone or a household pet. Faded yellow post-it notes –curling at the corners probably lined the bottom of her monitor and a collection of miniature plastic cats or origami birds most likely occupied the space between the number and 'F' keys on her keyboard.

Reaching the reception area I signed in and asked for directions to Cindy's office. A head popped up from a pod of cubicles next to several east-facing windows. Soon I was introducing myself to a woman in her early thirties with dark shoulder-length hair and a bright smile. She led me down the chest-high hallway to her double-wide, window-lit cube. We sat down, chatted about recent rainy weather, about it being so nice to meet in person… I offered my thanks that she had taken the time to meet with me and she insisted that it was the most satisfying part of her job.

We went through each of the concerns she had raised in the email that had been the catalyst for our meeting, adjusting until she stated that if I made the listed changes to the study, the rest was fine.

She stood up and lifted some file folders out of a box. Each had the name of a school on it, several were quite full. Would it be okay, she asked as she stood there

looking at the name on the outside and then peeking at its contents, if they placed me at a school where there were few or no current research projects underway?

Sure, I said, giving several staccato, micro-nods, *so long as they had bilingual, ESL and 'regular' 3rd and 4th grade classrooms*.

Several days later I sent the following email and attachment.

Hi Cindy,

In thinking about our conversation about location/site/teacher selection I created list of criterion using a few resources that might help in identifying strong teacher candidates / schools. It is crude and unwieldy in its current form but I thought I would send it your way to see what you thought (should you have time). :-)

Best,

Justin

Teacher Selection Criteria ~ Rubric
School Name: _____ Principal Name: _____
Teacher Name: _____ Grade: _____
Teacher Type: Bilingual [ ] ESL [ ] Regular [ ] Educational Technologist [ ]

Criterion	To a High Degree	To a Moderate Degree	To a Lesser Degree
Quality: meets (Fulton & Pruitt-Mentle, 1998)			
Content Standards			
Developmentally Appropriate			
Academic Success: demands, reinforces & produces (Ladson-Billings, 1995)			
Literacy Competence			
Numeracy Competence			
Technology Competence			
Political Competence			
Cultural Competence: utilizes (Ladson-Billings, 1995)			
Culture as Learning Vehicle			
Community as Resource			
Home Discourse as Resource			
Critical Consciousness: cultivates (Ladson-Billings, 1995)			
Sociopolitical Consciousness			
Critical Competence			
Multiple Perspectives			
Significance: transformative potential of technology (Fulton & Pruitt-Mentle, 1998)			
Beyond Incremental Improvement			
Initiating Novel Interactions			
Impact on Practice			
Evidence of Success: enjoys (Fulton & Pruitt-Mentle, 1998)			
Positive Administrator Feedback			
Positive Parent Feedback			
State Assessment Success			
Glocality: technology integration demonstrates (Fulton & Pruitt-Mentle, 1998)			
Unique Usage Based on Local Needs			
Broad-Use Potential			
Subtotal	(n*3)	(n*2)	(n)
Total			

Table 1: Teacher selection criteria.

Two months later, Cindy wrote to inform me that my application had been accepted but with no site recommendations:

> This letter is to let you know that I have received all necessary forms and to notify you of the final approval of your research project… Unfortunately, reviewers did not recommend any particular campuses for implementation; so you may want to consider first approaching schools that are conveniently located, have particular demographic characteristics, or where you have a professional or personal connection. Let me know which principals you would like to approach and I will send them notice of approval.

I talked through the matter of finding a school with James, Ann, and Ernesto – classmates of mine and middle school teachers in the first two cases and a Flagship University researcher in Ernesto's case. James suggested I try and go through the district's Instructional Technology department.

Ann said, *they know who has been asking for help and support*.

Ernesto, continuing their line of thinking said I should, *find out about their funded tech projects, and talk to the director or Alejandro. We are working with their IT department on a project; if you want I can give you some information about it.*

A week after my conversation with James, Ann, and Ernesto I trudged up to the study tables on the third floor landing in the University Gym –the landing offering the

best cell phone reception in the building. I unpacked my laptop, hooked up the wireless mouse, wifi card, AC adapter and anti-theft cable. I laid out my three tri-folded forearm towels and half-empty Dasani water bottle. I opened the MS Word table I created of potential schools and district departments along with the names of key contact personnel and their telephone numbers. I would have preferred to have just sent out several dozen emails to the schools I had identified but district policy keeps staff email addresses private. I flipped open my white and silver Samsung cell phone and looked at the numbers next to the Bilingual and Instructional Technology department. Who to call first?

I shut it again.

Better email Ann, James and Ernesto from class to thank them for their suggestions before I start, I said to myself.

Thirty minutes later I was contacting the Bilingual department in hopes that they might help me identify bilingual teachers who espoused, if not enacted a critical pedagogy in the spirit of the Gloria Ladson-Billings-type participant I desired, educators who saw language and teaching as something other than benign and a-political, believed in multiple literacies/discourse groups, viewed apprenticeship as a means of sociolinguistic development , were skeptical of schooling's meta-narratives, and used digital technologies in support of language and literacy development.

I dialed the first number in the table listing bilingual department staff members and set the communication mode to 'speaker phone' –leaving my hands to busy

themselves at the keyboard, typing up notes or accessing files supportive of the conversation.

Three rings.

Voicemail.

In listening to the message I learned that she specialized in secondary, not elementary school bilingual literacy support. No need to leave a message.

I highlighted her information within the table and decreased the font size to 8 point. Skipping past the next few names I located the bilingual instructional coordinator for elementary education, Amanda Echave.

I dialed Ms Echave's number and she picked up.

This is Ms Echave. Hello

I picked up the phone and switched out of speakerphone mode, stumbling through an introduction; all the while asking myself why I didn't practice beforehand, why I decided to call her first and not the instructional technology department… As I finished my voice slowed and my pitch deepened slightly:

So I was wondering if you could recommend a few teachers who teach bilingual 3rd or 4th grade who also use technology in support of their critical literacy practices?

One-Mississippi,

Two-Mississippi.

I'm afraid I cannot help you, what did you say your name was again?

Justin, Justin Olmanson, O-L, man, son. So you are saying that you don't know of any such teachers?

That is not what I am saying Mr. Olmanson. I know of some teachers like that but if I tell you, you will call them and say that I told you to contact them and I don't want that to happen.

One-Mississippi,

Two-Mississippi.

I'm a little disappointed Ms Echave that you believe you know how things will go before you even know me. It sounds like maybe you have been, burned in the past?

I don't know what to tell you. Unless you get permission from the director of the bilingual education department first I can't help you.

We ended the call and I slouched back in my chair wondering how I had so quickly forgotten how things worked in school districts, what else had I forgotten?

I decided to dial Instructional Technology director Dwight Sandeen's number before trying Alejandro or any of the other instructional technologists listed in my table.

His number put me through to an administrative assistant to whom I had to repeat my name several times as the connection was poor she said. We hung up and I called her back. She thought the signal was a little better and so passed me on to Daryl. I was, still, on the third floor landing in the gym and my phone showed four bars-worth of T-Mobile connectivity. Dwight answered and said hello, I read a slightly revised introduction I had typed up in MS Word:

Hi my name is Justin Olmanson; I'm a PhD student in instructional technology at Flagship University. I've been approved to do research in [your district] and am

currently looking for an elementary school. I'm studying technology discourse and usage in support of literacy development, language arts and language learning.

He wasn't cutting me off, he was just listening. This was great news, I continued:

I was wondering which elementary school teachers spring to mind as examples of teachers using technology in that way or if there are there any schools that you know of which are implementing technology-supported literacy or ESL initiatives or if you can think of any other ways I might identify an elementary school with bilingual, ESL or 'regular' teachers who use technology to support of language & literacy development? If you could I would really appreciate it.

One-Mississippi,

Two-Mississippi.

Yeah, you're breaking up pretty bad. I heard that you're doing research in [the district] and then I didn't get anything else. Is there any way you could call me back on a land line?

Sure, I said, we said goodbye and I flipped the phone shut. Scribbling his name and phone number on a half sheet of recycled paper. I grabbed a pen and went down the three flights of stairs to the courtesy phone on the wall next to the courtesy iMac.

I picked up the receiver, dialed nine, the number, and as it started ringing I wedged myself between two seldom-used drinking fountains mounted on the same wall as the phone. Facing away from the steady stream of foot traffic entering the building, I set my pen and paper down dry basin of the fountain closest to the back wall. The ringing

stopped and I got a laugh from the admin as she recognized my voice. She connected me with Dwight again, affirming that yes, this time, the connection really was much better.

So your study is about technology? he asked after commenting on the improved phone clarity, *I don't remember seeing it pass by my desk.*

My family is amazed with what I've done
going to school and taking care of them.

They always tell me how proud they are.
My name is Mark Dong,
I'm a senior engineering technician for a civil engineering consulting firm.

"If I want to do something,
I will try my best to accomplish it."
–Mark Dong

I help the engineers with the graphics of their designs.

I love my job because there is such good teamwork.
When I went to China to get married,

I made the decision to go back to school.
I know that without my education, I wouldn't be where I am right now.

The faculty and staff at ITT Tech were very helpful in my development.

In fact, I still maintain contact with some of my instructors. I just love
to watch my two boys grow up, and I want to give them the best that I can.

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http://vids.myspace.com/index.cfm?fuseaction=vids.individual&VideoID=691408

Figure 11: Societal discourse section.

It's an ethnographic study of the way classroom teachers use technology in support of literacy and language learning.

So you aren't introducing anything into the classroom yourself?

No there is no intervention.

Well that explains it.

Do you know of any elementary teachers in [the school district] which use technology in support of literacy and language learning? Whether it is just a teacher who has asked your department for help or maybe an official technology initiative?

'Yeah, we have a couple programs; the main one is with handhelds.'

He went on for about two minutes describing the implementation efforts they had and were undertaking at the Interstate high school, Bartlet middle school and starting this year, Gepler middle school.

Those projects sound real interesting, I said, *do you have anything going with elementary schools? I am interested in 3rd and 4th grade classrooms specifically. These are the grade levels at which I'm approved to do research.*

Yeah, he said, *we're working on integrating a few of them into elementary schools. Why don't you let me transfer you to Alejandro and he can fill you in on the program.*

I was transferred, restated my name and explained my request; I then listened to him talk about their work at the middle and high school levels before restating my approval to work in elementary schools only.

We are planning on putting some iPODs in two different elementary school classrooms, he said, *does it matter to you where they are?*

I'd love to be a part of the site identification process.

Say, do you know someone named Ernesto at Flagship University? He sent me an email today about someone interested in doing research and your name sounds familiar.

Sure I know Ernesto, we're in Dr. F's class together.

We agreed to meet at Seattle's Best next to Whole Foods on 6th Street Monday morning at 8:30am. I extracted myself from between the water fountains, hung up the phone and climbed the stairs up to the third floor landing two at a time.

It took me twenty minutes to park outside of Seattle's Best before the meeting. The first time I passed it I was heading south on North Larimar Boulevard thinking I could turn right at the corner and just drive into the parking lot behind it. Instead I was forced to take Larimar across the bridge and into the southern part of the city. I turned around, swinging up to Main street across the bridge and back again on Bar street. Next I parked in a garage just before the coffee shop, I got out and walked toward the café but, seeing a sign threatening to tow Seattle's Best patrons I returned to my four-door 1999 Corolla, exited the ramp and took a back/side street over to the official parking lot for Seattle's Best, Amy's Ice Cream, Vespa, and the other shops making up the up-scale strip-mall boutique retail space. I entered the mostly empty coffee shop, ordered a blueberry danish and Odawala Superfood drink, paid with exact change, and chose a table next to an outlet with a view of the street.

I noticed Alejandro as he made his way to a seat at the other end of the store, while their email addresses are kept private, all IT specialists in the district have a photo next to their name on the departmental website. I made eye contact with him and mouthed his name, he smiled and came over. We shook hands and he sat down across from me, his back to the window.

I noticed you when I came in but I saw you were using a Dell, he said.

I looked up to respond but was blinded by the sun coming in the window right behind and slightly above his head –which was just a dark outline rooted below a mass of brilliant light. I found that only when I extended my left arm somewhere between a US military and Hitlergruß salute that I could make out the features of his face.

We made small talk until we were joined by two of Alejandro's instructional technology colleagues. José wore sunglasses and a light, unlined jacket; he took a seat with his back mostly to the window. Sarah set down three coffees and a large pastry before saying hello to me, sitting on my side of the table but at an angle which made it possible for her to look at Alejandro without scorching her corneas. They each had a coffee. Sarah had cut up her scone to share with José.

Alejandro eventually got the meeting started,

We want to see how our iPod initiative is going, we also have project Poder too. We have never really gotten any data except survey data out of our technology initiatives. The Poder project is about the teachers and students, it gives a little push to our ELL (English Language Learner) teachers to use technology with their students and the applications, ultimately we want the students to work with them. Our iPod stuff is not

related to Flagship University, we've worked with middle schools and high schools, three high school ESL and two middle school teachers. In middle school they were used in the content areas, Melinda was using them with Language Arts and others used them with Science.

Alejandro went on to explain that each participating teacher received a set of seven iPods, two days worth of training and ongoing support from the IT staff who made suggestions for use but did not mandate particular activities.

One social studies teacher at Interstate (high school) put his lectures on them and played them via speakers and then…

We sat there as they tried to think of different names of elementary school teachers that might work in the iPod project. Sarah and José each had their laptops out. They browsed through campus directories throwing out names.

What about Peter over at Diego?

No he's low.

There's always Blanca at Zapata?

What grade does she teach?

Fifth.

...

We need to find two people that are receptive and that have a clue.

The equipment should arrive this week, by some time in November they should have the initial training and have the equipment delivered to them, that's the goal. Let's

think about these names and see if something comes up, if we could pull this off by next week...

José and Sarah flip their laptops shut as I begin the process of breaking mine down; the sun is still in my path.

Ten days later Alejandro sent me an email identifying both the school and two of the three teachers who would participate in the iPod project and my research. We would be at Zapata Elementary and would work with one third and one fourth grade teacher, both teaching in self-contained bilingual classrooms. I telephoned the school, set up a meeting with the principal and requested a few minutes to meet with the two iPod teachers. Two days later Alejandro sent out an email alerting the teachers of my impending visit and updating everyone on the timeline and goals of the iPod initiative.

Initial School Tour

After parking on the street north of the school I walk along the sidewalk toward the eastern side of the building and in through the main entryway. Once inside the red brick building I find an auditorium directly in front of me and a hallway to my left with a sign hanging from the ceiling that reads *'administrative office'*. I walk in that direction past both a long, downward-sloping hallway and a flight of stairs up to a second story. I turn into the office door just next to the fifty-gallon campus fish tank, the sound of its aerator bubbling along. The school office consists of a long, narrow row of chairs and walkway space separated from a larger series of desks, and back offices by a long counter

and a half door. I approach the counter and tell one of the front office staff members who I am and that I was expected by Ms Tamboril, the principal. I take a seat in the publically accessible portion of the space and wait. Five minutes later, a slim, 5'4" woman in her late forties emerges from the back offices, Flor Tamboril, wearing a Posh Beckham-inspired hair cut, greets me with a handshake, saying that we can talk in the Vice Principal's office.

She opens the half-door that separates school staff from students, parents, and the general public and motions me through. We walk back the way she had come. We pass her office, the faces of several students look back at us through the open door. Ms Tamboril mentions they need time to '*cool off*' besides she adds; the VP's office is cleaner.

Once we sit down, she let me know that she had read the research proposal I sent to the district and had no questions about the study, and was happy to be included in the research. She began asking me questions about the IRB approval process. About the process I went through for obtaining informed consent for the included videotaping component. She tells me that she recently submitted her own dissertation proposal for a Campus Improvement and Leadership program at Regional State University.

I explain the process as I experienced it, presenting her with two copies of the administrator consent form for my study. These forms, I point out, contain a special additional section required to gain optional consent from participants to gather and use video in the dissemination of scholarly research.

She spends several minutes reading over the consent form, signs one copy and suggests I speak with the librarian as well as other members of the school technology committee to identify prospective participants who would take part in interviews but not classroom observations. I agree and also ask to be notified of any upcoming technology committee meetings and access to copies of minutes from previous meetings if available.

As two participating teachers had already been selected by the district's Instructional Technology Department, I ask her about the matter of identifying a third classroom teacher who would be willing to participate in my research. I hand her a Teacher Identification Venn diagram I had created to help identify the best candidate.

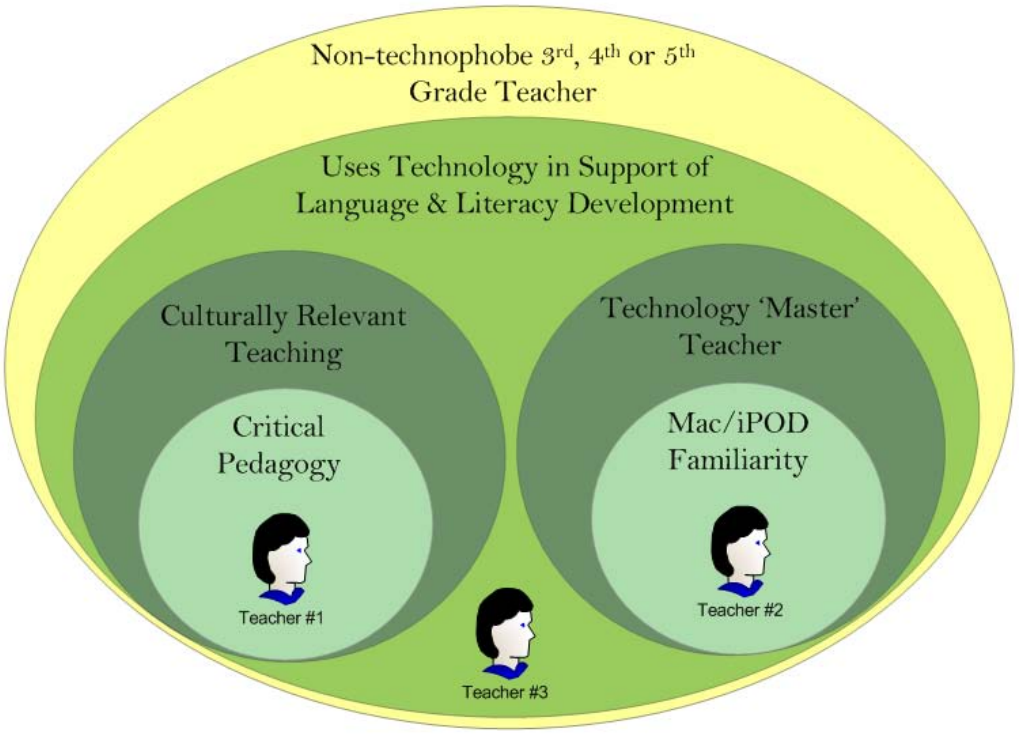

Figure 12: Teacher preference Venn diagram.

She looks it over and suggests I contact Mr San Vicente, a sixth grade teacher, saying he was into technology as well as critical pedagogy and taught language arts and social studies. I explain that my study is approved for 3-5th grade students and teachers. Asking if there is anyone else she could think of, pulling ten copies of a flier I created to attract an interested teacher to the study out of my backpack and handing them to her. She agrees to put it in each 3rd, 4th, and 5th grade teacher's box and then leads me out into the school to see the campus and meet the two pre-selected teachers.

We turn left out of the office and walk a few steps before Principal Tamboril stops to say hello a student, asking about older brothers and sisters as she hugs her. Third through sixth grade were located on the second level, she explains, and as we climb the stairs, I comment that it has been a while since I had been in a two-story elementary school. Yes, she says, Zapata is over 70 years old, but district maintenance personnel made it halfway through giving the interior halls a different look via a coat of lavender paint.

I notice the scent of latex-based paint edging out the smell of must, pencil shavings, and little bodies.

Why only half way? I say.

I sent them away, I had to, she says, *otherwise the whole school would be this one color!*

At the top of the stairs on the right is a large window with chain linked fencing on the other side of the glass. Through the glass and fencing, the rooftops of the single-story portions of the campus are visible. We turn left and walk a few steps down the hall,

stepping in to the first classroom on the right. I quickly say hello to Ms Saucedo after Flor introduced us and ask if I could return during her planning time to talk. She agrees, and Flor and I leave her third grade classroom. We turn right and walk down the length of the hall, past a 12'x10' map of the world, past several other classrooms, past a science lab full of 5th graders, and past an empty computer lab full of black Dell desktop computers. We made a dog leg to the right, into another hallway connecting the original school building with a second annexed section. At the very end of this hall was Virginia Ortiz's fourth grade classroom. As we had done in Ms Sauceda's room, I was introduced and asked to speak with her during her planning period.

Only Water

After meeting the iPod teachers, Flor leads me back down the stairs and through a sloping hallway connecting the original two story building to a newer single-story structure housing the library, pre-k, kindergarten, and 1st grade classrooms. On our descent, waist-to-ceiling windows on the left side of the hall show off a campus courtyard while the right side wall holds 8"x12" photographs of smiling students and adults each holding a book. As the hallway level out, it continues on toward classrooms; we however, go through the doors on our right and into a room full of chest-high wooden bookshelves, and knee-high students sitting cross-legged on the floor near the door, each holding, waving, or reading a book. The room, smelling not of latex paint but rather moisture and mold, consists of the aforementioned bookshelves, reading and sitting areas, a large office, and two tables worth of computers.

A woman with short curly white hair stood bent over a computer, taking a book from the outstretched arms of a student standing in line next to her. Scanning the book, she presses a few keys on the keyboard and then hands the book back, motioning its recipient to join the pod of students sitting on the floor before taking a book from the next child in the now dwindling queue.

Maggie listens to Flor introduce me to her, briefly outlining my research as she finishes scanning the last student standing's book before straightening up to shake my hand. Flor leaves us, possibly to check on the state of the students she left in her office. Maggie tells me that she'd be happy to participate in my study about education and technology; she mentions that she just finished her master's degree in information design at the major university in the area. While the students on the floor get up and exit into the hall, she recounts some of the technologies she used and to which she was exposed during her coursework.

As we talk, she mentions the names of others at the school and in the district who she says are *plugged into technology* that I should talk to, such as Laura O'Brian the campus technologist and first grade teacher. She also lists upcoming events I might want to attend. Another group of students enter the library walking in a single file line with their teacher. I make a motion to leave as they enter.

Stay, I like lots of people in the audience when I perform.

Still in their single-file line, the students walk to the back of the library and climb up onto three levels of carpeted risers that form a semicircle facing a small table and

wooden chair. I take a seat to the side of the kiva near a spindle of paperback chapter books for more advanced readers. From my chair, I can see some of the students and Maggie's performance.

As they file in and sit down, she tells me this is to be an integrated lesson due to a campus-wide focus on raising math test scores that has everyone from her to the PE teacher working to find connections or make connections to math within their particular fields. With this first grade bilingual class, as well as the other of the classes that would come in this week, the story they'd hear would be related to the mathematical concepts of comparison and measurement of quantity.

She starts off telling them about the community Spanish course she is taking. Since they are a bilingual class, she'll practice her Spanish throughout the story. She holds up and reads the title of P.D. Eastman's book *Little Dog, Big Dog* from the chair at the bottom of kiva to begin the story.

Uno pero chiquito [A small but]

Uno pero grande [A large but]

She says pointing to each dog in turn.

Did I say that right?

Perro [dog] the teacher says rolling the *r*.

Isn't that what I said?

Pero [but]

Perrrrrro [dog] the teacher and a few students say.

Oh I see.

She tries several more times before continuing with the story.

Next to the chair is a Venn diagram drawn on chart paper propped up against an easel. As the story unfolds each dog's characteristics are positioned in the Venn diagram, by the end *wags tail* is the only commonality in the intersecting center of the comparison device. The story takes about twelve minutes to complete, including the time Maggie spends translating the easier words into Spanish and the teacher and students spend helping her.

She reads a short book about measurement. At one point, she reaches behind her under the table, grabbing a metal kitchen measuring cup and a white plastic one gallon container with the word CLOROX printed on the side in a large bold typeface with white letters against a colorful background.

She tells them that she has to get water for *a big, muy grande puppy*.

Which should I use to get the dog something to drink?

Four or five hands pointed toward the metal measuring cup.

I don't think you understand. Which should I use to fill up the dog's water bowl, muy grande?

Again a handful of fingers point to the metal cup.

But I only want to make one trip.

…

A few first graders point to the jug.

She smiles and nods, tipping the jug upside down.

Yes this is the one to fill the dog's water dish.

A swallow of liquid arches out of the jug and disappears into the carpet.

It was only water, she says, glancing in my direction and toward the classroom teacher walking toward us from the chest-high stacks, having slipped away to pick out books during the activity. The students climb down from the risers and sit on the floor while Maggie checks out books.

After the class leaves, Maggie shows me a display of books she pulled from throughout the library that highlighted different mathematical concepts. She takes me on an online tour of the networked library system and its resources. I give her a copy of the consent form to read and one to sign, schedule an interview with her, and use the time in between the staggered 3rd and 4th grade planning periods to type up and expand my notes.

I visit with Ms Saucedo and Ms Ortiz during their planning periods. Neither had many questions, though both are hesitant about the possibility of being videotaped. During our brief visit, Ms Ortiz mentions that she wishes either the TV in her room was hooked up to one of the computers or that she had an LCD projector so she could show United Streaming videos and other content. Ms Saucedo states that something is wrong with three out of her four student computers. In comparison to the last district she was in,

she feels the district has no comprehensive plan to support technology integration. I give each teacher copies of the consent form and ask for their permission to return later in the day to observe a class period.

As the iPods are not scheduled to be purchased and installed until February I decide to do some pre-iPod integration observations, some interviews, and continue looking for a third teacher to participate in my ethnographic study about technology integration, use, and discourse in an urban elementary school.

What do you say when you meet someone

At ten minutes to 1PM, I walk up the hall from the library, back up the stairs and down the hall to Ms Ortiz's room. I open the door and slip in, spotting an open stool next to the computer table on the left side of the room. Before I could sit down, Virginia interrupts the class activity.

I need to introduce you to someone.

Is he the iPod guy?

This is,

…

Mr. Olmanson, I whisper

This is Mr. Olmanson, he will be here with us to observe for a while and during when we have the iPods.

…

What do you say?

Thank you, several of them say in a fractured unison.

No, Virginia says, laughing, *what do you say when you meet someone?*

Hello

I say hi and they go back to the five-question math test they are working on before I came in. Two computers down from me is a student slumped over a keyboard typing in all caps, working on his fourth line of text, adding letters hunt-and-peck style. The rest of the students in the room are at their desks, arranged in clumps of three or four.

Reused plastic Gatorade, Nesquick, and Dasani bottles stand on some of the student desks with varying amounts of water in them. The room is shaped like Oklahoma with a sink, cupboards, and a door leading to an in-class bathroom in the panhandle with the student desk groups radiating out from the center of the pan. Virginia sits at a kidney-shaped table near the back of the room between the air conditioning unit and the two bookshelves that created the class library space. Students come up to her when they have questions and to say they were finished. If she is busy with another student, they approach Ms Paloma, the bilingual special education specialist, who is also in the room.

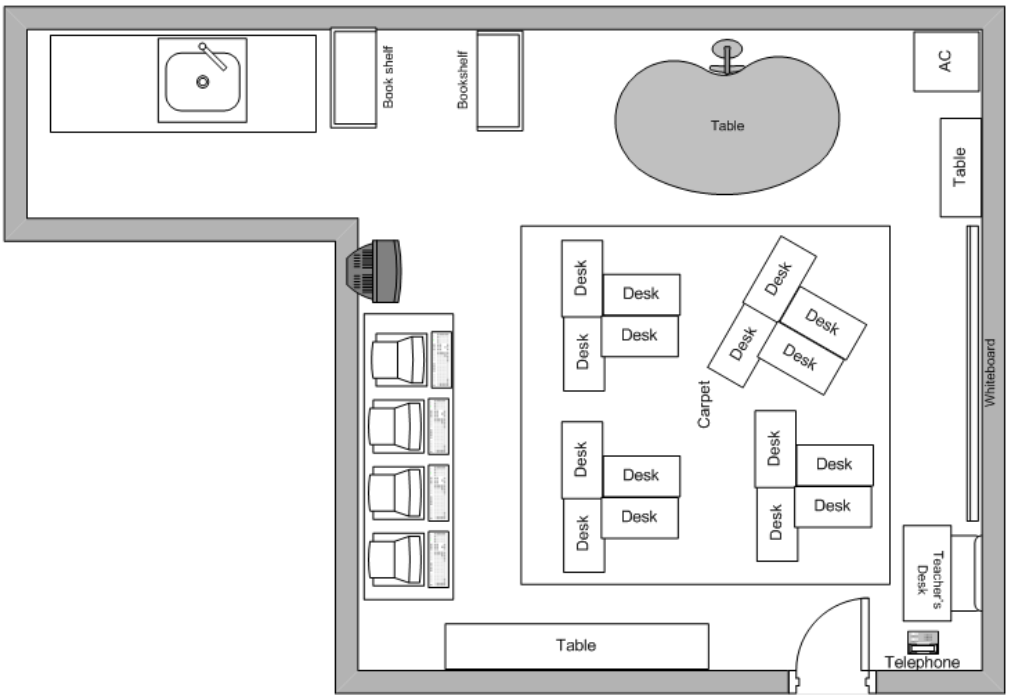

Figure 13: Layout of Virginia's Classroom.

Dragons, Dolphins, and Changos

Three days later, I enter Jasmine Saucedo's bilingual 3rd grade classroom at 8:55AM to find students bent over worksheets. I quickly walk across the room and take a seat next to two different student groups. Each student has a sheet of paper with the top three-quarters filled with English text. Each sentence is numbered and some of the words are written in bold letters. The question below the text requires students to identify the correct sentence number or word. There is another passage-question dyad on the reverse side of the page as well. Both passages are about the weather. According to the instructions they need to predict, based on the facts contained in the passages, if the people in the passage would be eating inside or outside.

Students draw lines and circle sections of text as Ms Saucedo, dressed in jeans, a dark blue Zapata Elementary 70th Anniversary long sleeve tee shirt, and black and white Saucony tennis shoes, marks up the copy projected on the screen in the classroom. After going through the clues and circling the salient parts of the article as a class, they read the question and take time in the darkened room to look for the answer.

From my stool next to the computer table, I hear pencils scratching against paper, feet kicking chair and desk legs, chair legs scratching against the wood floor as legs move bodies closer and farther away from desks, a whispered suggestion to '*write it down*', the steady hum of the projector, the sonic whip of the condenser engaging followed by the rumble of the AC unit, and the intermittent clinking and clattering of pencil sharpeners and other plastic items falling out of their open desk cubbies.

At the end of the activity, Jasmine switches the projector off and announces that today is their aide's last day working with them. A handful of sighs go up from around the room as faces turn toward him as he stands near the door, pitching forward on the balls of his feet, his mouth open in a tight smile revealing metal braces.

Ms Saucedo switches on the lights and students begin their 'center' time. Around the room are a number of centers and depending on the day or the time of day, members of the Dragons, Ballenas, Playa, and Longhorns groups go in different directions to begin their center activities.

The students at the Reading for Comprehension center pick their folder out of a large plastic container. They are to complete the next activity sheet in their folders. For

today's sheet, they need to (1) come up with two sentences using five words from the word wall without repeating any of the words, (2) write the sentence, checking for punctuation, (3) show it to Ms Saucedo, (4) add a picture in the box next to the blank lines.

At the Reading Fluency center, students break up into groups of two, reading aloud as much of a passage as they can in one minute's time. Once they finish, they mark how far they read and then count how many words they read in that time span.

The theme at the Nonfiction Reading center is animals and habitats. Students sit on the floor under desks, in the library area, and under the whiteboard. The larger group breaks up, but no one reads alone, they whisper and point at images of animals.

The group answering to the name Dragons walks over to Ms Saucedo who has taken a seat at the kidney-shaped table back by the AC unit. She reads and they follow along, the words and sounds tumbling involuntarily out of their mouths. She pauses every few sentences to ask questions about the passage she is reading as well as to address the comments and queries coming from individual members of the Playa, Ballena, and Longhorn groups.

The intercom beeps four times, *May I have your attention please*

[silence]

There is a silver firebird parked outside with its lights on, silver firebird with its lights on.

A sneeze, page turning, students getting up take a different book back to their reading area under their desks, others getting up to read words off of the word wall. Some focus on writing their two sentences, some create their picture first, a few ask Gabriela to draw their picture and then color it in with crayons, colored pencils, or markers –the lines meant to hold their sentences still blank.

87, Mayra says in a whisper loud enough for me to hear halfway across the room

90, Jose says

No way let me test you, I'm counting the words.

No I'm counting.

Girls sitting in the library area, shoulder to shoulder, their backs against the wall, their laps full of open books about monkeys nested within open books about monkeys.

Look at the changos

Ay que mono

Laughter, reaching for other books, page flipping, pointing, no one reads alone. Isaac and Omar read a Babymouse book under Isaac's desk, each holding a copy.

Look at the chango [monkey] Ms Saucedo.

!Que changos tan interesantes! [What interesting monkeys!] Jasmine says looking at me with bright eyes.

Ms Saucedo I'm done.

Am I done?

Boys and girls, don't use markers to color your pictures, she says holding the up the word wall sentence sheet, it is double sided and the marker has bled through, obscuring what is on the other side.

Is this really just a minute? Ms Paloma says holding up the two-inch tall cylindrical plastic hourglass timer so Jasmine can see it.

It's a minute five or a minute seven, something like that.

No way.

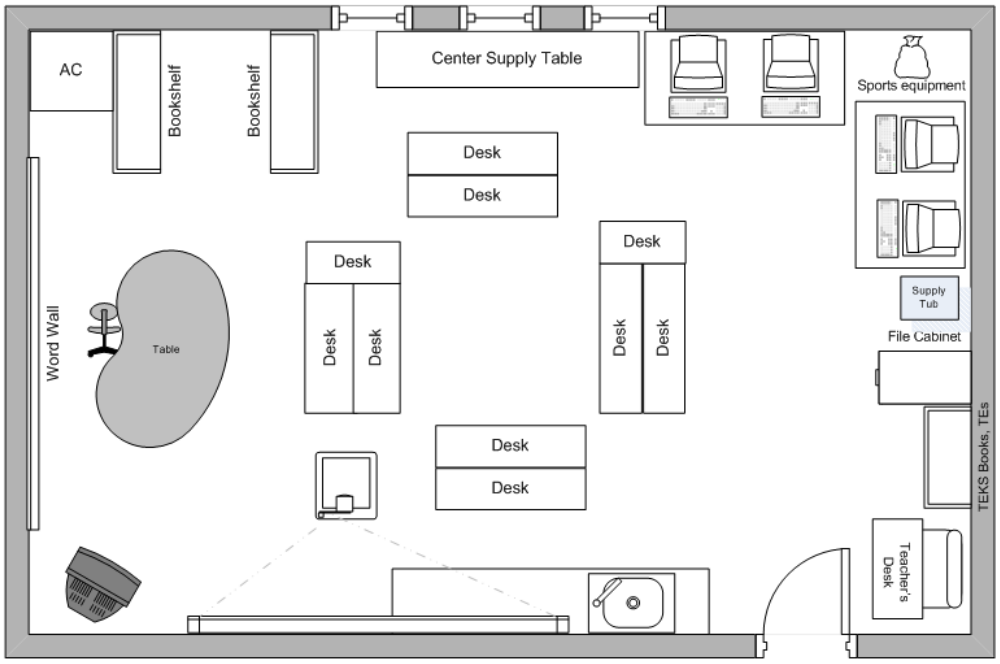

Figure 14: Layout of Ms Saucedo's Classroom.

At 10:05am I left Ms Saucedo's room, walking down the second floor hallway, past the floor-to-ceiling map of the world, past the empty computer lab, to Ms Ortiz's 4th grade classroom. I let myself in and sit on a stool next to the computer tables.

Written on the white board is a list of the classroom group names. Next to each name are tally marks:

Dolphins |||,

Mustangs ||||| ||||| |,

Cowboys ||||| ||, and

Aguilas ||||| |.

Below this, in the middle of the whiteboard in blue dry-erase marker is the day's writing prompt.

Escribe una composición acerca de una aventura [Write a composition about an adventure].

Underneath the prompt and affixed to the whiteboard with a piece of masking tape is a piece of paper that begins: *Antes de escribir, brainstorm* [Before writing]. Next to this is another piece of paper taped to the whiteboard with an outline of a radial map drawn on it.

Students bent over their papers make alternating rustling, scratching, and brushing noises. Rustling as they flip between the brainstorming and radial map outline they made

to help facilitate their story writing, scratching as they write the next few words whispering each aloud as they wrote it, and brushing as they wipe the eraser remnants where they rubbed off a misspelled word or ill-worded phrase.

Not quite drown out by the AC unit, a classical arrangement floats out of the boombox near the kidney shaped table, filling in the quarter notes between whispered words, scratching, wiping, and page flipping with bits of melody from an organ and string quartet ensemble.

Ms Ortiz, wearing a white sleeveless cowl-neck sweater, her hair pulled back into a bun, and large silver hoop earrings, sits at the kidney-shaped table facing a student in a red tee shirt and tan shorts who, pencil in hand, is bent over his own paper. Ms Paloma is here too, sitting with a student at a smaller table next to the kidney shaped table, examining his eraser.

To my left, a girl with a pink and violet flower in her hair puts her pencil down and shakes out her fingers. She raises her arms over her head crossing them at the wrists, fingers interlaced; she arches her back, her chin pointing toward the ceiling.

Ms Ortiz tells the students to close their planning and writing notebooks, it's read aloud time.

We need some of these, says Ms Paloma leaning over toward Ms Ortiz and showing her a white and blue *Pentel* high-polymer eraser, *they leave no marks, perfect for the TAKS.*

Ms Paloma leaves the room and the students gather round Ms Ortiz's chair near the classroom library. They sit close to each other on the floor, one student on each side of her and the rest two deep in front of her.

Is he going to read with us? a girl asks looking in my direction as I move from my chair next to the computers to one nearer the library.

He's going to listen.

Virginia spends the first five minutes asking questions about what has happened in the book so far. They are about three fifths of the way through Esperanza Rising, by Pam Munoz Ryan. I notice a poster in the corner titled, Esperanza Rising Predictions with sticky notes affixed to it.

Where did we leave off?

What were your predictions?

What could happen next?

As she begins to read I notice that there is more than just Ms Ortiz's copy of the book. Students in groups of two and three are following along together in one of four other copies of the book. Instead of looking on with classmates, some students look up at Ms Ortiz or down at their feet, or alternate. Ms Ortiz reads a paragraph. Esperanza has just started working for the first time in her life, cutting potatoes for planting while her mother is convalescing in the hospital.

Why did it say that the grape vines were naked? she says, *What does that mean?*

Many of them laugh.

No leaves is the consensus.

No underwear, says a boy sitting on a pillow, wedged between one of the library bookshelves and the wall.

Go change your color, she says, he hesitates, she turns back to the book as he gets up.

Why is she sad?

Can anyone make a connection with that?

We finish the chapter and before closing the book and getting the students in line for lunch, she notes that the next chapter is called, Los Aguacates [The avocados].

Walking down the hall on my way to the library I see Ms Saucedo standing next to her students as they take turns using the restroom. I ask her what is wrong with her computers and she says that one has an issue with audio, another plain doesn't work, and a third has a collection of issues. I asked her to place a sticky note on each of them stating as much and I would try and get them working again. She thanked me, and I continue down to the library to type up notes.

The night before, I received a call from Blanca Villa, a fifth grade teacher who was interested in being part of my research. We had agreed to meet in her classroom

during her planning time right before school let out. I had some trouble finding her room as it was right next to Jasmine's third grade classroom leaving us with just a few minutes to meet before her students returned from special areas (Art, P.E., and Music) to gather their backpacks and jackets to head out or settled in to work on their homework. We talk about her class and my research. She had dark brown shoulder-length hair and wore a dark blue tee-shirt with the word NAVY written in bold yellow letters across the front. As her students return, quickly filling up the room, she breaks off our conversation.

If you want to hang out for a few minutes Justin, we can continue our conversation once I get everyone settled.

Sure, no problem.

Students taking the bus are dismissed first, followed by car riders and walkers, each group placing their chairs upside down on their desks. Blanca addresses the few students staying to finish yesterday's homework.

Ernesto and Enrique, next door there are a couple of cute Flagship University tutors to help you with your homework, why don't you go over there and finish it up, it'll probably go faster.

As they left, Blanca explains that she teaches Language Arts and Social Studies in a departmentalized 5th grade classroom, seeing one ESL and two bilingual cohorts per day. She also mentions how much she likes having researchers in her classroom.

I'd like you to let me know how I can improve my teaching. You should know that I'm involved in another program now as well via the WeTeach program.

I tell her that is fine with me and she goes on to mention all the dates coming up that would be, in her words, *no good for observation* because of field trips, benchmark testing, and school assemblies.

That's okay, I think we can work around this, I say before thanking her and heading home for the day.

Thanksgiving and the winter holidays came and went, school started up again in the new year, February 1st arrived but the iPods didn't. They were still at Instructional Technology headquarters and would remain there until the protective covers they ordered arrived and were fitted on each of the 14 iPod minis. It was the middle of March before we heard that things were in place for iPod delivery and installation contingent upon completion of a half-day training session scheduled for the morning of April 1st.

Teacher in a Pocket

All guests arriving at the school must write their name, time of arrival, and nature of their visit in the visitor's log binder located in the school office. They must also write their name on a paper adhesive name badge and affix it to their person in a visible place. I say hello to the office staff and write my name, 8:15AM, and iPod Research Project on the next available line. As I fill out a name badge and stick it to my green polo shirt, I ask Sandra, who sits closest to the counter separating the three work stations from the public space in the office, if she knows where the iPod training led by Alejandro Zaragoza will be held.

The library, she says.

Heading out of the office, left past the stairs, and left again down the sloping hallway and through the library doors on the right, I find Alejandro and Ellen in the front part of the library, near the overhead screen where the upper grades sit at miniature tables in miniature chairs after they've checked out their books and are waiting to head back to class. Alejandro and Ellen are connecting mice to keyboards, and the keyboards and sets of seven iPod Nanos to two white iMacs with 27 inch LED cinema monitors. There are newer editions of the iMac on the market, but these two are at least five years younger than the black Dell desktop machines with the CRT monitors that populate Blanca's, Jasmine's, and Virginia's classrooms as well as the computer lab.

I say hi to Alejandro and Ellen, and walk over to Maggie who is re-shelving books in the easy-reader section of the half-size stacks.

How did your test go?

In late February, I told her that my qualifying examination –parts A, B and C of my qualifying examination would keep me from observing very often in March and early April.

It didn't go especially well.

Well at least you are done.

Yeah, I say nodding, *done with part A, two parts left to go.*

…

Wandering back toward the front of the library, I see Virginia, sitting in front of one of the iMacs. She is wearing khaki pants and a blue Zapata Elementary short sleeved

shirt, her hair pulled back in a high ponytail. To her right at the other table in the row, Ms Saucedo sits to the side of the second iMac writing out what appears to be a series of checks. She is wearing blue jeans and a light blue zip-up sweater.

How have you been? I say looking at Virginia. Clipped to her pants are her keys, district ID badge, a green dry erase marker, and a yellow highlighter.

Nothing like the first of the month, I say to Ms Saucedo going over to her short stack of pre-addressed envelopes.

Principal Tamboril comes in and comments on the new computers and iPods, we speak briefly about her doctoral program at Regional State University, and my recent comprehensive exam.

You seem to know everybody already, Alejandro says as Flor leaves. He introduces me to his colleague Ellen, a first year Instructional Technologist for the district who is wearing a pink shirt with black pants, her brown hair pulled back with barrettes. Sitting on one of the tables across from us, his left leg swinging freely, Alejandro picks up the bag of assorted Nestle bite-sized chocolates lying on the table. He pops it open before letting everyone know that we're getting started, his left leg swinging freely, Alejandro is wearing a dark cyan shirt, khaki pants and brown loafers. A blue lanyard holding his district ID badge hangs from his neck as do a pair of white ear-buds, their cord disappearing into his shirt pocket.

He picks out one of the chocolates and sets the bag down, spilling its contents onto the table in our general direction. Virginia and Ms Saucedo are already seated near their new computer and iPod class set. I grab a chair and position it in the two feet of

space between their tables, from here I can see them, their computer screens, and view the presentation as well. On my lap sits a blue, $40-on-eBay, AlphaSmart, note taking device.

Saying that he wants to *keep this informal*, Alejandro, flanked by the chocolates on one side and a twenty-ounce bottle of Dasani water on the other, begins by asking if either teacher has checked out a campus or district-purchased digital camera. Both shake their heads.

I mostly use my own camera –I'm just so used to it, says Virginia.

So what are we going to be downloading? Books? Ms Saucedo says.

Alejandro asks them what their ideas are for using the technology. Virginia says she plans on recording her struggling readers, further stating that she bought a set of iPod-enabled portable speakers on clearance for $16 dollars so everyone in class can listen.

Redirecting the conversation, Alejandro talks about the importance of obtaining parent signatures on district talent release forms for each child.

[This] gives us permission to use their work and image in news articles and video. We want you and your students to create with technology, we want to publish as much as possible to the iPods and externally to iTunes or other websites.

The black metal iPod containers that Alejandro purchased and modified look like a typical strong-box only with a hole in the side to allow a usb cable to pass from a usb docking hub to the iMacs in order to both charge and synchronize the iPods while they

are locked inside the containers. The containers themselves were outfitted so they could be anchored to a table with steel cable.

Alejandro explains that the district's instructional technology department started experimenting with iPods in ESL and social studies classrooms at the HS level a year earlier, expanding the program to a few middle schools and one pre-kindergarten room – pre-k receiving audio-only iPod shuffles for use in classroom music centers.

Don't send [the iPods] home. At districts that they do, they bring the parents in and have them sign [an agreement to pay the replacement cost should the unit be damaged, lost, or stolen], he says.

His PowerPoint presentation includes the url address of his Wiki: ***es**.pbwiki.com.

And what exactly is a wiki? says Virginia.

Alejandro gives a brief explanation along with an overview of the two-part training plan—they'll have part one today.

Session 1 is the intro, how to use the computer and maybe we'll look into the iPods. Session 2 focuses on software like garage band.

He goes through a PowerPoint presentation that gives the Instructional Technology Department's rationale for the English Language Learner [ELL] iPod project which includes the importance of presenting content in multiple modalities, using a platform or instructional vehicle that meets the students at the sweet spot of their digital literacy, and has the potential to amplify successful practices.

Some of the slides cite research and books: *How People Learn, Access and Engagement, Literacy Technology and Diversity*; others suggest classroom management ideas since there are only seven iPods per group and 15-18 students in their classrooms. Alejandro concludes the presentation by encouraging them to support their students in going beyond consuming content and into the process and procedures required to develop and publish their own material by using the iPods for content consumption, freeing up their classroom computers for creative work.

Two of the things you're getting are these little mics, they're very high quality, you can record reading samples or keep a record, he says holding up one of the white add-on microphones before continuing, *what would engage a 5th grade girl and boy? Soccer but in English, but what would a girl like?*

Chismes [gossip] podcast in English, says Ms Saucedo.

Novellas [soap operas] or maybe E news, says Virginia.

Alejandro nods, pushing student-created content such as interviews, songs, speeches, pictures, and presentations as preferred uses for the devices.

Anything from United Streaming can go on the iPod, he says before describing the department's suggested three-part, sixty minute iPod project lesson cycle of twenty minutes on the iPod, twenty minutes on the computer, and twenty minutes with the teacher leading the entire class.

The stuff is yours, it belongs to Zapata, Alejandro says, outlining the iPod Project User Agreement which requires participating teachers to come up with two different ways to test the effectiveness of the iPods with their ELL students.

[This is] $2500 worth of stuff that you're getting so keep that in mind. Probably closer to $2700. Find out [what] helps, doesn't help, [or] hurts, something we can put numbers to. It might not pass muster, he says pointing to me, *[but] you'd be surprised what passes muster.*

These guys have a CD and DVD burner on them if you ever want to send content home you can just burn CDs.

So are we good with that, ya'll understand what everything is?

After a pause wherein no concerns are raised Alejandro announced a five-minute break.

I ask Virginia how she is, she calls it crunch time with the TAKS coming up in late April.

I'm just trying to think of how to use this in a way that will motivate them, she says, *when [testing is] over then we'll be using them a whole lot.*

She also mentions that her students have been using TELPAS, the Texas English Language Proficiency Assessment System for English Language Learners which has a highlighting feature they enjoy.

The training reconvenes with Virginia and Ms Saucedo logging into their iMacs for a Mac OS introduction/refresher including the finder, a few utilities, browsers, and AppleWorks.

Virginia asks a question about webmail via lotus notes, and we spend several minutes talking about webmail, wireless signals, and passwords. For these two

computers, the password is *tiff$2000.* Someone notices that the Microsoft Office program installed on these machines is not very recent.

Maybe with the booooond, says Ellen.

This was not the first time I had heard district employees mention it, the proposed $197 million dollar bond election would be presented to voters the following November with some of those funds earmarked for the purchase and installation of additional educational technology equipment ("_ISD Bond Information," 2009).

Alejandro showed them Garage Band, an audio editing and creation application, and Photo Booth. They played around with Photo Booth, taking pictures with the integrated camera at the top center of the monitor and applying different effects.

I grew up in the wrong time, says Alejandro showing them how the Safari browser automatically looks up words in an online dictionary when they are highlighted, how they can zoom in and out, how to use YackPack, a web-based audio recording tool, and how ClustrMaps, a geographical hit counter, works.

Do we need to show how to add music to the iPods, Alejandro says at the start of part two of the day's training.

No, they both say.

I don't understand how to download something that's not on iTunes, says Ms Saucedo.

Alejandro directs them to FreeKids Music .com, showing them how to download an audio or video file via a browser before saying, *let's take five to seven minutes to*

download as much stuff as we can today, once both teachers seem to have the hang of it, he and Ellen step out of the library.

I don't know what my kids will think of these songs, says Ms Saucedo looking at her screen displaying a partial list of available titles.

I'm like where's Hannah Montana, says Virginia.

Are there songs in Spanish? I say.

I don't see any, says Virginia.

When Ellen and Alejandro reenter the library the focus turns to using iTunes.

Well let me show you a little about iTunes. Audiobooks are good but they are fairly expensive.

Can you listen to a section of it before you buy it? Maggie says from within the half stacks. Alejandro confirms that each audiobook for sale has a thirty second preview.

We have been meeting in the library all morning, but no one has asked the librarian about her ideas, nor have they inquired about school or district resources.

One of the ways I was able to learn how to read was GI Joe audio records. Let's go to iTunes U, this is more for you guys not so much for your students. It's pretty neat. There are course recordings here's one from Yale, says Alejandro as he clicks on iTunes U, getting a list of the participating colleges and universities.

I make a hissing noise and the others laugh.

I'm required, I say smiling.

You went to Yale? says Alejandro.

No I went to Harvard.

Well my brother went to Yale, says Virginia. I hiss again.

I don't see Harvard, says Alejandro scrolling through the list of Universities.

Nah, they're selfish, I say.

Let's look at podcasts, says Alejandro after a few minutes of poking around in iTunes U but no downloading or subscribing by the two teachers. He plugs ESL podcasts like Eigo, an English language learning program created for native Japanese speakers that focuses on phonemic approaches to language learning.

These sites might make for a good way to have the students investigate how people in different places learn a language, I say, noting that for every podcast created in the US there is one created in Japan, the UK, Australia, Mexico, Poland, Spain, and other countries/cultures. This comment garners a shallow *yeah* as they continue searching.

Take 15-20 minutes to look around, says Alejandro, *stick to the Podcast site.*

The room fills with voices explaining the difference between *fun* and *funny* on the Tu Ingles podcast, a woman asking where she can find the rice (ESL Aloud), the number six (Sesame Street), exploring with Dora (Nick Jr.), the meaning of the word *gentry* (Very Vocabulary), and a reading of The Witch Who got into Trouble at School (Storynory).

I make jokes, wondering aloud if there is a Hugo Chavez learns English site and what its content and message would be.

With the teachers previewing the Hannah Montana podcasts, Alejandro leaning as far back in his mini blue chair as the molded plastic will allow, and Maggie talking about sex and butterflies and science projects with another teacher, I slip out of the library and

walk up to Blanca's classroom to load a PowerPoint presentation of some of the works at New York's Museum of Modern Art onto her computer. It only takes a few seconds and I wave goodbye as I get up to leave.

Will you be here next week? she says, looking past the group of students with whom she is working at the table by the window.

No, I've got part B of my comprehensive exams, I say. They wish me luck and I head back down the stairs and down the hall to the library.

A few minutes after I reenter the library, Alejandro brings up a list of links on the screen to the left of the tables. He shows BreakingNewsEnglish.com and VoiceOfAmerica.com, two news services that offer written and spoken news at a slower pace as well as accompanying group and individual exercises and activities. He previews LibriVox, an effort to create a spoken version of every book in the public domain and Digital Chalk, a web application for creating presentations.

Let's go to Discovery Education Streaming which used to be United Streaming, says Alejandro bringing up the site on the screen and showing them some of its different features before letting them explore the site's content on their own. As Virginia and Ms Saucedo search for and download video files from the site, a group of what look to be first graders come into the library walking in a wavering single-file line in the direction of the raised risers in the back of the library, occasionally bumping into each other as they look around the semi-darkened front portion of the room. Their teacher says hi and asks Alejandro a question about a technology request she made on behalf of the school. I

realize that she is probably the campus technologist and make a mental note to ask if she would agree to an interview later.

Jolene Hayes, another instructional technologist comes soon after and starts helping Alejandro configure the media settings on the two iMacs so they play audio and video files with Quick Time by default.

Which do you think I need to select, he says as the screen displays several media preference options.

…

Ellen answers his question.

They begin trying to write some of the files they've downloaded onto their iPods. Each of the files needs to be converted into an iPod friendly format first.

Take 15-20 minutes to grab some stuff off of united streaming, he says as the computers convert the files in the background.

I ask Virginia if she has a place picked out for the iPod center, she says she doesn't yet but thought there would be room somewhere near the other computers.

I'm going to put mine where the other computer that doesn't work is, says Ms Saucedo.

You mean they didn't fix them all when I put in that fire ticket?

[They've done] nothing.

They didn't wave their wand? Here I was thinking that you had 4 working computers all this time.

In the far corner of the library, Maggie is finishing up reading the book *Little Willy* to Ms O'Brian's first graders. As they choose books and sit in a line ready to leave the library, I introduce myself to Laura and ask if she would be willing to be interviewed. She agrees, so long as it doesn't interfere with her teaching.

We break for lunch agreeing to meet back in the library at 12:30pm. While we eat, Alejandro asks me about my research interests and I ask him about the possibility of getting an iPod station set up in the school library as well as what he can tell me about how Fire Tickets work. He says that there are no plans to integrate iPods into any district libraries. He also explains that the instructional technology and technology support departments are separate. He is not sure how they triage their support requests, otherwise known as Heat Tickets.

A few minutes after 12:30PM, the training resumes with a focus on the iPod Nanos themselves.

At two, we'll take everything up to the rooms to get things setup, three at the latest, says Alejandro. He shows Virginia and Ms Saucedo the iPod locking mechanism, how to slide the devices of their quarter-inch thick, semi-hardened, black rubber cases, and how to position the clear plastic screen protector, letting them each practice until all the iPods are unlocked nestled in the rubber cases.

Does anyone know Dansk? he says scrolling through the list of available operating system languages. I raise my hand, reading Danish is pretty much the same as reading Norwegian. I practically minored in Norwegian.

Use the English setting, he says.

Between setting the language on the iPods, Virginia asks Ms Saucedo if she too is doing after-school tutoring leading up to the TAKS test. She nods.

Then the fun begins, I say.

No the fun ends when we leave here, says Ms Saucedo.

I'm curious about how you all introduce them, says Alejandro.

Jolene, wearing a black blouse with the left sleeve rolled up her forearm, a gray knee-length skirt, and black slingback open-toed shoes, talks about how a 6th grade teacher they worked with had her students generate ideas about how to care for and use the iPods in the classroom.

Once each unit was configured Alejandro motions to the microphone extensions that connect to the iPods and suggests they try them out.

I'm terrified of breaking it, says Ms Saucedo handing it to Alejandro to remove the accessory from its plastic packaging.

I hand each of them a book of poetry from my backpack, *Black Zodiac* to one and *Negative Blue* to the other, both by Charles Wright. Virginia turns a few pages and then sets it down, turning around in her chair to select a book from the book shelf behind her and begins reading into the iPod. Ms Saucedo also puts down the book I gave her, saying that she'll take the microphone home and try it there.

You should take the iMacs home too. Just check them out, Alejandro says bringing up the Read 180 program.

Yeah, we didn't get that up and running [this year], says Virginia.

Don't get me started, says Alejandro, *but they had a great feature, one of the better ones, that was audio books which had reading strategies and thought provoking questions [embedded in them].*

They load the brief test files they made into iTunes, following Alejandro's instructions as to how to rename the file, set the artist's name as well as the genre.

How do you guys see using your mics with your students? he says.

For my student who doesn't read, who doesn't hear her mistakes, she can play it back, says Virginia.

Like math vocabulary, I'm thinking of that, it's such a big push, says Ms Saucedo. *Once it's in iTunes you can do so much with it,* Alejandro says nodding. He talks about an ESL teacher at the district's welcome center for international students who used the microphone like the conch in William Golding's book *Lord of the Flies* was used.

What do you think?

…

When I was teaching writing I think it would [have been] powerful to have them read it back to themselves, because when they read it sometimes they don't hear what they are doing, says Jolene.

In the background, Maggie is reading a story about a frog going through different stages of its life aloud to a class of what I guess are second graders.

We gave you two mics since you had seven iPods, they cost about sixty dollars. But teachers really like having the mics to have students dictate into [them], Alejandro says before noticing that the LCD projector has frozen.

We pause as he resets the LCD projector and advances the PowerPoint presentation.

Mr. Ridgehome lectured into the iPod mic and then played it back to them as a group. The next day he gave each student an iPod to control playback. The amount of notes taken based on the lecture increased greatly, he says, showing the quantity of notes side by side on the next slide, *they call it a Teacher in a Pocket.*

The final part of the day's session is an introduction to iMovie, a video editing and creation application that comes standard on their iMacs.

When asked, Ms Saucedo says that she's never used iMovie. Virginia tells the group how she used it to make a video with her students about Cinco de Mayo.

We like to use iMovie to re-edit media in all sorts of ways, says Alejandro looking at Jolene suggesting that she take over.

You're better, he says.

Jolene, her district name badge clipped three fourths of the way down the middle of her blouse, gives an overview of the functionality of iMovie, briefly demoing how to start creating a video, then turning it over to the teachers to try for themselves.

The last 30 minutes of [training in] iMovie is to give you a peek, next time we will go in depth, says Alejandro. Jolene stands next to Ms Saucedo as she clicks on different iMovie features. Virginia asks for help getting onto the Zapata server to access the content in her folder. I reach over and smooth out my name badge which is curling at the corners.

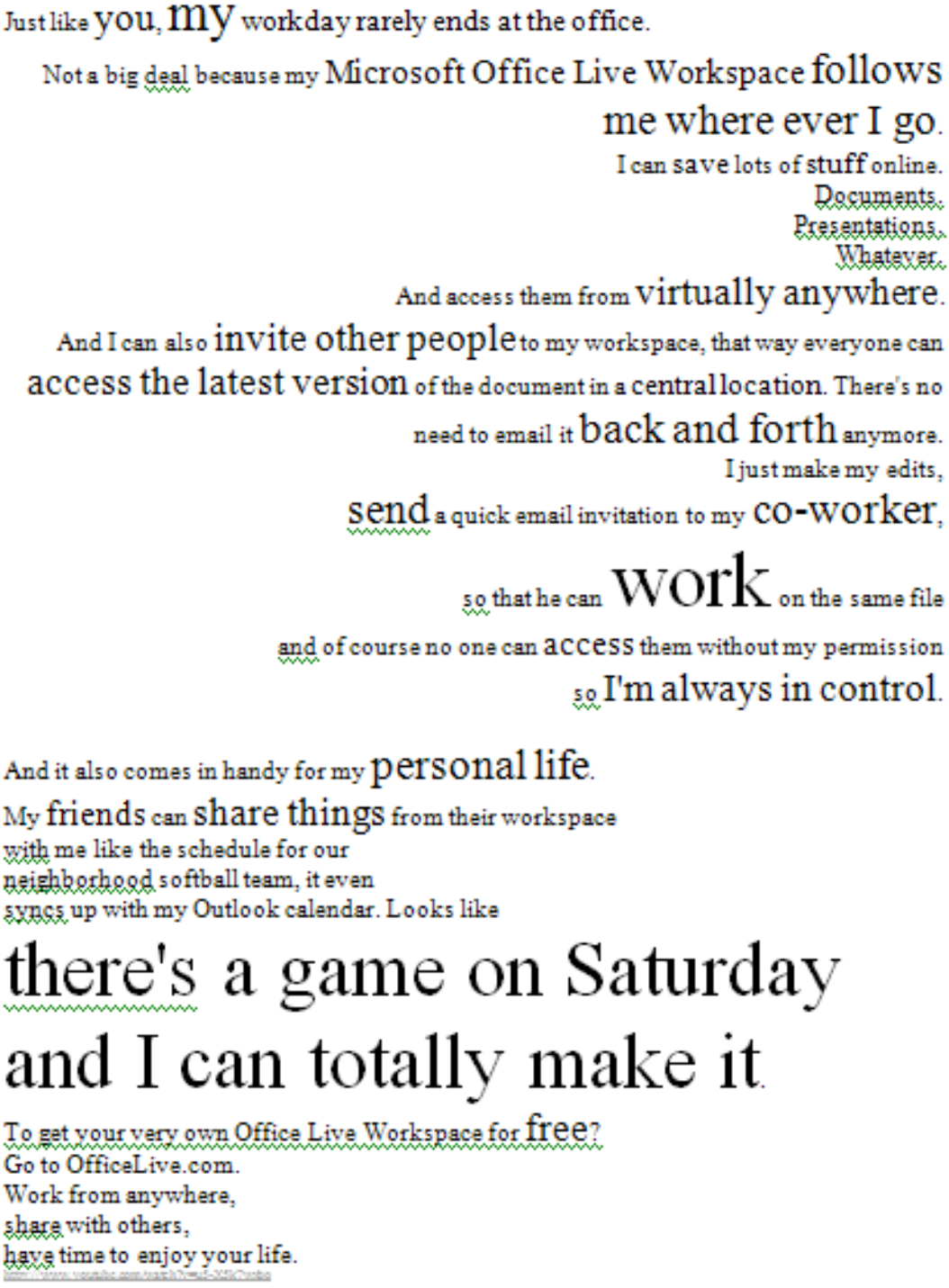

Figure 15: Societal discourses about technology.

Before I can stop myself I suggest to Virginia that she could use iMovie to make an individual TAKS pep-talk message for each of her students.

Yehhh, she says softly, not looking at me.

At 1:48pm Alejandro announces that they are ready to move the equipment up to the teachers' rooms.

What about the kids, should we wait? says Virginia without looking up from the iMovie file she is creating. Ms Saucedo asks what the question was also concentrating on her iMovie project. Virginia suggests that they wait a little bit, still not looking up from the screen.

Unsolicited, Alejandro shows Ms Saucedo how to log in to the Zapata server while Ellen asks them both to sign for the equipment.

Give the extra copy to the inventory person, Ellen says as she puts their mics back in their packaging again.

As Alejandro and Jolene pack up the peripheral equipment they tell each other about their families. Across the room two students are searching Wikipedia while another reads a book and the librarian reshelves books.

How do you feel about using it with your students, Alejandro says, *let me know if you need anything.*

Virginia asks how she can record herself and her students using iMovie. Alejandro breaks off his conversation with Jolene to show her how. After each step, Virginia writes down what he does in her notebook.

Ellen asks Virginia where she's from, Weslaco in the valley, she says. Ellen mentions that she just moved to Austin from McAllen not far from Weslaco.

Ms Saucedo figures out how to drop an image into the theme box and use it in her video. Jolene comes over and shows her how to add her published video file to her iPods.

We unplug the iPod stations from the iMacs and carry them upstairs to their classrooms. Alejandro tethers both the computers and the iPod boxes to the table on which they are placed. Virginia and Ms Saucedo get ready for tutoring while the rest of us make our way down the stairs and out the building.

We are Focusing on What?

One month later, I had finished my comprehensive exams and was back in Virginia's fourth grade classroom. Her room, when I entered in the early afternoon, felt warm and humid; students were drawing and coloring at their desks.

Going from group to group I ask them questions about what they are doing. Reading rally they say—they are recreating and enlarging their favorite book covers in anticipation of Reading Rally day. *Firegirl, Esperanza Rising, Hide and Seek, Diary of a Wimpy Kid,* and others were being sketched and colored into poster-sized representations. Looking around the room, I notice most of the signs and posters listing reading strategies and mathematics vocabulary are gone from the walls. The bulletin boards are still covered in blue butcher paper, though the money display, with its laminated dollar bills, paper coins, and callouts remains up. The *Skill of the Week ~ Destreza de la Semana* banner on the back wall has nothing underneath it, the word wall too is empty.

A few students start over, their first poster a victim of overzealous erasing or careless coloring, others decide the cover art on the book they've chosen is too difficult and change books, still others work on a second or third book cover.

A few minutes before 2pm they stack their posters on the reading rally supply table and Virginia, dressed in a red sleeveless top and khakis, introduces the next social studies project standing at the white board.

We are focusing on what?

The Alamo, several students say.

So I'm going to break you up into teams so you can do a PowerPoint, or a collage, or a video. So you really need to know your stuff.

The computers are off, the TV too, the nearly haptic hum of the air conditioner is replaced by the subtle whirring coming from the mini-fridge sitting below the microwave in the front right corner of the room, behind the teacher's desk.

April's Books

I return the next afternoon to find the students paired up with the iPods, though there are no headphones in sight. An outline of the iPod interface buttons and wheel as well as several questions are sketched out in blue dry erase marker on the whiteboard:

When did the battle begin?

When did the battle end?

What were they fighting for?

Where did the battle take place?

Who won the battle?

Virginia, wearing a white Zapata 70th anniversary tee-shirt with blue lettering, white slacks, and white Nike tennis shoes, tells them that each iPod has three videos about the history of the Alamo and Texas' bid for independence. Each student pair can choose two of the three to watch and answer the questions.

Pointing to the enlarged interface on the white board Virginia shows them how to pause the video if they need a moment to take notes, how to adjust the volume, how to scrub forward, and rewind.

Click once, if you click once and you don't hold it down it's gonna go

Way far

Yeah, it's gonna start all over again or it's gonna go back to your three choices so be careful, if you want to rewind you have to hold it down and then release.

On Virginia's go ahead they practice navigating to a video, playing it, pausing it, moving around in it, and increasing and decreasing the volume –though this is still theoretical as they have no headphones as of yet.

Ishmael is dying to tell you how to turn up the volume, Virginia says to one group that can't quite seem to figure out how to use the wheel.

After a few minutes of this, Virginia, still standing in front of the white board, asks them to put the iPods down before beginning to talk about the possibility of going on

a field trip to San Antonio to see the Alamo for themselves. As they talk about their ideas and sketch out a two week plan Virginia fills another section of the white board with notes.

Alamo

-cost

-hours of operation

-bus or van

-how many fit

-hours of operation

-who will drive?

-Food

-where will we eat?

-Other ?s

-Time to go & come back

-How much $ do we need?

-SCHEDULE

-Fundraiser

The students, some leaning forward over their notebooks others rocking back and forth, offer suggestions and copy down the ideas and questions Virginia writes on the

board. Two weeks, they decide, is the amount of time it'll take to raise the money they need to make the trip.

Virginia directs the iPod group, now with headphones and a 1:1 student to iPod ratio, to take notes about the history of the Alamo based on the videos loaded on the devices. The computer group is to research the rental cost for a van or bus to San Antonio. The others are to use their social studies books and books from the library to find more information about the Alamo and its history.

With about fifteen minutes before the end of school and as Virginia is reminding her students to read and study their multiplication tables at home and during their free time, a boy in a gray tee shirt, its sleeves hanging down past his elbows, teeters over to Virginia, in his arms is an 18"x12"x10" white and green box with green lettering spelling out *Scholastic* on the sides.

A cheer and a series of *yeahs* rise up from the class their fists in the air. The boy holding the box smiles giving it to Virginia, the scholastic books they ordered in April have arrived.

Hey look at this she says, pulling out a glossy book with a black and white image of a young girl's face with that of a very old woman's, the word 'Holocaust' across the top of it. They ohh and ahh, coming over to gather around as Virginia leafs through a few of its pages before handing it and the other books in the box to the student who ordered it.

Reading Rally Eve Day

I park my gold 1999 Toyota Corolla on the street above the north side of the school, getting out, my AlphaSmart in hand and new digital recorder in my backpack I notice principal Tamboril getting something out of a blue recent model Volvo S80. I need to schedule a second interview with her but found myself too anxious to approach her. Instead I take a path to the front entry of the school that ensures that our paths do not cross.

Heading toward the office, I run into Ms Saucedo, her students in a line at the bottom of the stairs to the second floor. Several of them hold balls and cones, beads of sweat dripping off their faces, and hair matted to their foreheads.

I say hi and ask her when she might be able to sit for a second interview. We settle on a day that works for both of us and I ask her if she has picked a time to begin working with the iPods. She had been waiting until after Reading Rally preparations were finished, though now that they were, she still wasn't really sure when they would begin using them.

We could do our book summaries but they are in Spanish, she says.

You don't feel like you can use the iPods for anything but ESL?

Well that's what they are supposed to be used for right?

Maybe you could use it as a warm up, a way to get them familiar with it.

Well maybe we could translate our summaries.

She mentions that she doesn't have a digital camera to use to take pictures. Meanwhile, a number of fourth or fifth graders walk past us carrying 8' long 1"x2"s disappearing past a group of parents milling around the school entry and into the auditorium.

You can use mine, I say, *just tell me when you are going to do it.*

Late next week or early the week after she estimates, *But you won't be here.*

That's okay, I say, *I am not here to make sure you use the iPods, I have an old camera you can use with the class if you want.*

Bring it, she says as she motions to her line leader to start their ascent to the second floor.

I step into the office to sign in and again see Ms Tamboril. Instead of approaching her about the interview, I only smile and say hi.

What do you think about our cats? she says pointing to a long stretch of green butcher paper covering most of the front office counter.

They don't even have any, says the attendance clerk standing to get a better look.

The parents did it, Flor says cutting across the other comment and looking at the bat-like figures on the butcher paper, *we can add wings.*

Passing Ms Saucedo's room and the floor-to-ceiling map of the world, I pop my head into Blanca's classroom to see small clusters of students bent over books, supplies,

and notebooks. We smile at each other and say hi. I walk down to Virginia's room, and as I enter, I see bottles of soda and bags of chips on the desks, music is coming from the boombox in the corner; two students skip up to me.

We're having a free day, one of them says.

The other one nods, *no homework, just playing.*

They hand me a stuffed animal—to dance with they say, before twirling away from me. Some students are lying on the floor talking, some are eating, while others play. Virginia comes in wearing a gray sweatshirt and sweatpants.

Hi, I say, *does the Reading Rally start right away at eight tomorrow morning?*

Yes, she says smiling.

I thank her students for letting me dance with their stuffed animal, tell Virginia that I'll see her tomorrow, and walk back down the hall to Blanca's room.

My goals for stopping by the school today included saying hi to everyone I'm working with, getting a feel for what will happen tomorrow, and completing a makeup interview with Blanca. We had originally scheduled one for last week, but at the last minute she asked if instead of being interviewed for my research, she could interview me about graduate school and fellowships. She had just been offered a fellowship from Regional State University and wanted to figure out if she should take it.

I walk into her room as her students are getting ready to head to their special area (art, physical education, or music), affording Blanca her single period of the day in which

to plan, meet with parents, correct papers, and be interviewed. Given the usual interruptions we'll have about thirty minutes for questions and follow up queries based on her responses. I pull my laptop out of my bag and start looking for an outlet close to where Blanca is sitting, ready for the interview. Soon we are both on our knees under the adjacent computer table looking for a power strip with an available socket among the wires and dust bunnies.

My computer finally plugged in and ready, Blanca and I sit at student desks across from one another, she is wearing a cream colored blouse, thick oval iron earrings, and a bracelet with rectangular turquoise stones set within an iron frame. Her teacher intern, Olimpio, from Regional Certification Program is checking his email five feet away; Blanca tells him that he can leave or stay. I turn on the tape, and we get started.

As I pack up my computer after the interview, I ask Blanca when she plans on sending out the permission slips so I can do interviews with some of her students. I am about to leave for a three-week vacation in Paris and Oslo and suggest that instead of trying to rush things before I leave, she could send them out in a week or so and let them trickle in while I'm gone. While it won't give me much time to conduct interviews, it might work out best as I can conduct them during the last days of school, pulling them out of parties instead of lessons. She agrees, and with students streaming in from the halls, we get up from our chairs. Many of her students carry swords made out of wooden yard sticks and wooden foot-long rulers held together with masking tape, cardboard

shields with masking tape handles, and other cardboard-based medieval accessories some of which refuse to hold their shape.

Heading back down to the office to sign out, I remember that I wanted to say hi to Maggie the librarian before tomorrow. I walk down the sloping hall a few minutes before the end of school to find the room dark and the door locked. The bilingual specialist, who has an office and mini classroom space in the back of the audio-visual storeroom in the back of the library, offered to open it up for me.

I'm just looking for Ms Nash to find out if there are any library-specific Reading Rally activities.

She tells me she doesn't know the schedule, and I thank her and walk up the raised hallway and out into the Texas afternoon heat. Instead of turning left and cutting across the kindergarten and pre-kinder playground, I vaguely recognize Laura O'Brian standing with just a few students. The lower-grade teachers stand with their students until each one is picked up by an adult or sibling with clearance to pick up the student. I walk over to her, fishing my interview schedule out of my backpack as I meander around other teacher-student pods. I introduce myself again and shake her hand, asking if she is still willing to participate in the project. She says she is, and we schedule an interview for early the following week. I thank her and walk up the sidewalk to the corner and back around to my car.

I'm in Love with a Book!

On a Friday in early May for the past twenty one years, Zapata Elementary teachers, librarians, students, and community members hold a day's worth of events celebrating reading. They call it *Reading Rally Day*.

I entered Zapata Elementary at 8:12 AM on a Friday in early May to find a handful of people clustered around the open doors of the auditorium. Some hold babies, others the hands of two and three year old children looking in. The beat of an instrumental version of Soulja Boy's song *Soulja Boy Tell'em Crank That* bounces out from the auditorium. I look over the top of this group to see Zapata's students, some sitting, some standing in front of their assigned seats. The stadium-style seating descends at a steady grade toward stage. With parents and guests in the back, each class beginning with the sixth grade seated about two-thirds of the way from the back is assigned to a long middle row or two shorter side rows at the beginning of the year. Their sections are labeled with their grade level and teacher's name taped to the aisle-facing side of each row. A wave of feedback builds and pulses through the auditorium's two 3'x3' speakers suspended on platforms a few feet below the 40-foot ceiling. I look down to the area in front of the stage to see Ms G holding a microphone up to the speaker of a boom box sitting on a table next to the stage. Up on the stage singing and dancing to a reading rally version of the Soulja Boy song are most of the 6th grade students, one parent, a few teachers, and the librarian, all are clad in light blue paper skirts over their jeans. This is the opening, and only plenary Reading Rally Day session until the afternoon parade and rally at the outdoor amphitheatre.

As the kickoff event finished, I walked down the sloping hall way toward the library hoping to find a schedule of events. Maggie, the librarian, first told me about the reading rally weeks in advance, calling it *the best* and *only one in* [the district]. I committed to attend and offered to help. Along with several other non-classrooms, the library was used to stage read-aloud performances, and as I made my way there, hoping to run into Maggie, she came out of the back door of the auditorium, still in her light blue paper skirt.

Anything I can do?

She asks me to help the author who would be reading/performing her book in the library get her props and PowerPoint presentation setup. I enter the room to find a woman in her late forties dressed in a red velvet dress with elaborate gold stitching, a white shirt underneath and a white and gold hat with a trailing white silk train. There is an old looking drum and other artifacts on a table to my left along with a large vertical, free-standing poster of herself dressed in the same period costume, just as it is on the cover of her self-published book: *Maid Martha Tells It All The Ghost of Hampton Court* by Martha Hannah.

I move a table out of her way, as she readies her props and unpacks several additional copies of her book.

After she tells me there's nothing else she needs, I walk up the hall and back into the original part of the school. Climbing the stairs and walking right down the hall, I find no one in Ms Saucedo's room or Blanca's. The upper grades travel to different areas of the school to hear stories and participate in activities voted on by the class. I walk past the

computer lab, past the single flight of stairs leading to the gymnasium, and to the end of the hallway to Ms Ortiz's room. I step in the classroom to find most of them wearing blue jeans and white tee-shirts. Red, black, and green bandanas hang around their necks. Two boys wear black polo shirts instead of white. Virginia is wearing blue jeans, a white top and a red bandana. Those wearing white shirts are getting fitted for hats made out of brown butcher paper cut into large circles rolled up around the edges, with a loop of masking tape serving as a hatband. One by one she calls them over to her, pushing their hats on their heads so they won't come off, eventually quelling the protests about how they fit by pushing one onto her own head. One student is not wearing jeans, she is wearing a yellow dress –she is Esperanza Ortega, namesake of a book they read this year titled *Esperanza Rising*. This is the theme they picked for their class in the parade.

Once they are all wearing their homemade paper hats, Virginia addresses the class.

Welcome to reading rally day, if you cannot control your emotions you will not participate in reading rally. Don't ruin the rest of the month together. Be nice to the readers, they are taking their time. You all look gorgeous.

Ms Ortiz some kids were laughing at me!

Which of us looks the best?

You all look great.

Before heading out to the events, Virginia announces the top three readers in the class, they line up in front of the white board, and we clap. She announces the top reader and we clap again for Esperanza, the girl in the yellow dress.

I return to the library to find Maid Martha still setting up. Maggie is dressed in a blue hat and brown khakis shorts. She has just been presented with a bouquet of purple tulips which partially hide her employee ID hanging round her neck on a lanyard.

I'm a camper she says, *I'm going with a campground theme this year.*

She also points out her husband who is *being a doctor.*

We talk as Maid Martha connects her powered on laptop to the library's portable LCD player. While testing the two, the laptop spontaneously shuts down.

Now who is the techie? she says turning toward Maggie and I, witnesses to her issues.

I can help with that, among other things, I say.

While I work to check her connection and battery power, she gets out her cell phone and calls her husband.

My computer, the Dell, has shut down, now why would it do that?

We get everything working and cued up for her as the first group, a class of fourth graders, who soon come in and take their seats on the floor facing the portable projection screen.

Well I am Martha Hannah, an author as you know. So tell me, what have you been told about me?

The students shake their heads and look at her and at each other.

What? she says, *they just said show up?*

[silence]

She goes over to the laptop to initiate her PowerPoint slide presentation which hangs up. She starts narrating the trouble she's been having with the laptop to her audience, slipping between a Tennessee drawl and what might pass as 16th century English.

Can I help? I ask.

My husband, business partner, creative partner usually does this. But he's at home –couldn't afford to bring him. He's also the illustrator.

The presentation finally loads, filling the screen with an image of the book's cover. She steps away from the laptop and begins.

I'm a medieval comedian and stand up historian.

It takes a village to raise an idiot, she says in her character's accent.

A few adults in the room chuckle, she starts talking about her book *The True Story of the Ghost of Hampton Court*, which is both projected up on the screen and displayed on the 2'x5' free standing poster to the side of the screen. Both the cover and the poster feature Martha prominently, wearing the same dress, jewelry, and hat that she is wearing today. She tells the audience to look for the next book in her Maid Martha Tells All, juvenile historical fiction series, *Bloody Bloody Mary*. Two boys in the back row lying on the floor next to each other in the semi-darkened room start whispering.

I'm watching you with teacher eyes, she drawls, staring at them. They stop and sit up, and she reverts back to her character's accent.

This king was so mean, he had many wives, killed 1000s of thieves, and threw people in prison.

A student raises his hand to ask a question about the history of Hampton Court Palace.

That's a good question but you could go on the internet and find that out probably, she says.

From my position in the back of the presentation area, most of the students sitting on the floor look from her as she reads/performs the narration to the illustrations of book's pages displayed on the screen as she cycles through the demise of each of Henry VIII wives, beating on her drum at certain points.

At the end of the story, she thanks the audience and bows to applause. Once the clapping subsides, she turns to the next slide which shows more facts and gory details about 16th century England which she reads aloud and about which she makes comments. Martha talks about how she published the book herself, how it was laid out by a company in Louisville, Kentucky and printed in China, and about how she had a youth about their age consult on the book to make sure it was scary but not too scary. One boy, half kneeling, half sitting on his feet, brushes his hands back and forth on the floor, creating and then smoothing out ridges in the carpet fibers.

Okay now it's time to go but you can reach me at my website Martha Hannah dot com.

The students start getting up, talking quietly.

Now give me a hand because I like applause.

A few fourth graders stand around her laptop, using the arrow keys to advance and play back her PowerPoint while others get in line. Several other students grab copies of her book lying on the table.

Now those are not free, but I am offering a 20% discount for you, $14.

Those with the books put them back down and start walking away shaking their heads.

It's a lot of money, Martha says.

I've got seventeen dollars, one of them says, getting into his class's line.

As the classes leave, I slip out too, again heading up the hall and up the stairs to the back of the second annex hallway to Ms Ortiz's room to find the special education teacher's friend who is scheduled to read *The Perfect Pumpkin Pie* by Denys Cazet, a book about a pumpkin-pie eating ghost. The reading is to be preceded by a talk about the health issues migrant farm workers face.

Virginia's students are all on the carpet square on the floor in the back of the classroom listening. None of them raise their hands when she asks if they know any farm workers. Ms Ortiz raises her hand and I do too. I spent three summers in southern Minnesota's corn fields pulling out the pollen-producing part of the corn plant in the rows designated as female eight to ten hours a day, six days a week. I was a farm worker of the unexploited kind, getting minimum wage, hourly water breaks, a thirty minute lunch break, and bonuses for being thorough. Virginia and I are not asked and I don't bring up my experience. Besides being sprayed with chemicals from a crop dusting plane once, I'm quite sure my experiences, voluntarily undertaken as a means of augmenting my

paper route income, are not the types of experiences she is talking about. We didn't travel across the country detasseling corn; a bus picked us up five blocks from my house every morning at 6:30am. We weren't paid by the row or withheld pay if someone detasseled the wrong row. We didn't attempt to unionize or threaten to strike or cross picket lines as the depression-era farm workers in *Esperanza Rising* had. We had tassel fights, took lunch breaks, and were dropped off in time to eat dinner at home.

She reads *The Perfect Pumpkin Pie*, 2006 Northern California Book Award Winner, while we listen, sitting close together in between Ms Ortiz's two small shelves of classroom library books. During the reading Virginia laughs at every play on words, each ironic or sarcastic statement—smiling and sharing a look with her students.

I leave the classroom midway through the book, hoping to slip into the library and sit in the overstuffed chair with ottoman in the back corner and or behind the computers to write down some of the things I've experienced so far; however, Martha is in the middle of another performance and I don't want to interrupt. I sit down at a table in the hallway where I will be able to see when the show is over based on the exodus of students filing out.

I'm about to start eating my breakfast when a man comes up to me and asks if I am with Martha Hannah.

No, I'm a researcher with Flagship University.

When I saw you I knew you were doing something important.

He tells me that he has been filming Reading Rally at Zapata for 12 years –he hopes to make a documentary someday. We speak briefly, and he leaves me to eat my

Teachers,

Just checking in about the ipod project. I know that this is a busy time but I'm hoping that you can answer a couple of questions:

1. Can you tell me how you've used the ipods with your class? A short description is all I need.
2. Are you going to be back at Zapata next year? If so I' like to plan on meeting with you one more time for the second PD day on iPod production.

Also, wanted to let you know about a PDA class I'm putting together called *Introduction to Podcasting and iPods in the Classroom* on August 6th. I can pay you $90 to attend. If you can make it let me know and I'll put you on the roster.

Thanks for your work this semester. Let me know if you have any questions.

Alejandro

Figure 16: Correspondence example.

breakfast encouraging me to use him if I can to further my work and in exchange he requests that I send him an email with Zapata in the subject line.

He gives me his card and walks up the hallway. Later, I would wonder about this exchange. As the day goes on, I notice his presence filming and giving out his card.

I wander the school, slipping into the library to check my email. I feel like I'm supposed to be diving into what's going on, really getting into it as a former teacher, as an ethnographic researcher, and as a member of the Zapata community. But instead I'm looking for a corner of the library to write notes and then pick a book off the shelves and read for a while. I wonder to myself if having no Reading Rally Day role has made me harder on Maid Martha. My actions feel flat and arid. I ask what I can do, how I can help, but the timing is wrong. Helping mostly means being there when an issue arises, being there during the process, jumping in or standing by depending on the teacher. I witness technology in use but I have not made this my garden, this is no *Pull of the Earth* experience.

Blanca invites me to the teacher's lounge for food and to eat it with the teachers and reading rally performers. I eat a plateful and then go and sit in the back row of the empty auditorium to type up and expand my fieldnotes.

Around me, taped to the auditorium walls are several hand painted signs on different colors of butcher paper.

I <3 books

I'm in Love with a Book

Read

Honesty, Courage, Respect

Reading is cool for School

Reading can take you Anywhere

Readers are Leaders

Around these, fastened with wire and fishing line are several multicolored laser printed banners that read:

Believe, Achieve, and Succeed

Treat others the way you want to be treated: Respectfully, Responsibly

Character education: Respect/Respeto, Courage/Valor, Caring/Afecto, Honesty/Honestidad, Perseverance/Perseverancia

Think Straight A's: Attitude, Attendance, Achievement

About fifteen minutes after I take a seat, people late teens and early 20s start coming into the auditorium in groups of four and five, carrying trombones, trumpets, a tuba and the like. Dressed in pumpkin colored band uniforms, they gather around the front of and on the stage, assembling their wind instruments, warming up their lips, releasing spit valves. Eventually they begin playing at their own pace. Ms Tamboril, the principal, comes walking down the left aisle in a blue tee shirt and black cloth pants,

black ears, a pair of black wings pinned to her back she goes down to the front shakes someone's hand and then makes her way back up the aisle. The Flagship University band rehearses the fight song with the Zapata Elementary 5th grade band, and Flor stops midway up the aisle, breaking into a brief soft shoe dance before exiting out the back of the auditorium.

I walk by Ms Saucedo's room, their theme comes from a book about pigs. Jasmine is wearing a pig nose and ears.

That's great, I say, *that'll keep the sun off you.*

I linger there until the awkwardness of me hanging out by the door not saying anything gets to be too much and I move on down the hall to see what Blanca's class is up to. I enter, and sit on a stool near the computers. I get out my camera to find that my batteries are dead.

Mr. Olmanson, how would you like to be the class photographer?

As she has done before, she has a knack for knowing how to fold visitors, volunteers, and researchers into the mix of her classroom. I am thankful to have a potentially useful role, for being folded in.

She gives me a digital camera and asks me as we are walking out if I would also mind watching / supervising two students who wouldn't be participating in the parade portion of the rally due to behavior issues. I agree, and as Blanca and the rest of her class head outside to the front of the school to find their place in the parade, unfurl their banner, and get ready to march, my two charges and I walk back to the auditorium to see if the band is still practicing. Finding it empty we walk down the sloping hallway, past the now-empty library, past the first grade and kindergarten classrooms to the double doors leading to the playground, field, and hillside theatre behind the school.

Realizing that the parade would start on the other side of the school, we walked back up the hallway to the front of the school and went out the main doors in hopes of finding a spot from which to watch.

We walk past the parade staging area, the readers with the most points in each class climbing up into the backs of pickup trucks, and the top readers in each grade level sitting in the backs of convertibles. Each class has a paper banner with the name of their teacher, their theme, and grade level. Costumes are adjusted, swords fall apart and are repaired, banners are taped, and the Flagship University band stands comfortably despite the 90 degrees-in-the-shade Central Texas heat.

Let's find some shade, I say to the two boys with me, motioning for us to go South to the corner of the block.

We turn West at the corner entering the beginning of the parade route. Soon after our turn, we overtake a group of people carrying clipboards.

Would you mind being a judge? says a woman.

I've seen her before, she may be the campus HOST coordinator, or the Flagship University Intern coordinator, or the Cognitive Approach to Math coordinator, or the Reading Specialist, or an active parent volunteer. She holds two clipboards.

Sure.

With a clipboard in my left hand, Blanca's two students in front of me, and a digital camera in my right hand, we walk West along the sidewalk until we come to the raised, shaded, stoop of the local community center whose facilities are separated from the campus by a narrow alley. The stoop offers a little shade and the parade is upon us quickly. The University Band leads off followed by students grouped by grade level and by class with each class carrying a banner announcing their theme and literary inspiration. I alternate between taking pictures, and filling in the blank judging forms

with teacher name, literary theme, and scores on a multidimensional Likert scale. My judging is haphazard and quick; classes walk by faster than I can fill in the identifying information, or contemplate if their costumes, creativity, or enthusiasm deserve a three, four, or a five. I give more thought and points to Blanca's, Ms Saucedo's, and Ms Ortiz's groups than the others. Some classes march behind their banner chanting reading-related slogans, their top readers riding in the back of a pickup truck, their grade level top reader in a convertible waving to the parents, staff, and community members who have turned out for the event.

As the last group of students goes by, I wedge the pen in the clipboard, turn off the camera, and lead my two charges through the community center's unlocked gymnasium and out into the school's back courtyard. We walk past the playground, and around to the front of the outdoor stage. The University band is already assembled and is playing up on the stage. Many of the lower grade students are also finished walking along the parade route and sit watching the band from the embankment leading up to the street.

As each class finishes their loop around the extra long block their teacher directs them to a section of the hill for them to sit. I help pass out bottles of water from ice chests positioned along the bottom of the outdoor theatre's stage. My car is parked at the top of the hill and I grab a large Flagship University Continuing Education umbrella out of the trunk. Blanca's two students and I sit under the umbrella drinking our ice cold bottled water while we listen to Ms Tamboril, a pair of wings sticking out beyond her shoulders, call out the names of the school's top readers who all line up along the stage to receive recognition. We participate in reading chants led by Ms Ortiz, and stand with everyone during the joint Zapata Elementary, and Flagship Band's playing of the University fight song.

Flor thanks everyone for coming and urges each class to pick up the plastic water bottles, wooden popsicle sticks, and plastic ice pop tubes after themselves. I leave Blanca's two students with her and head indoors to cool off in the empty library. I sit down in the overstuffed chair, put my feet up on the ottoman and reread a chapter of *Harry Potter and the Goblet of Fire*, sipping water, waiting for the sweat to dry.

Ten minutes later, I head up to Blanca's classroom to find them collaboratively writing thank-you notes to the people who led the reading showcases that they went to during the day. Olimpio, her alternative certification state region teacher intern, types up and formats the ideas and phrases the students come up with on a computer hooked up to the LCD projector, his thin 6'8" frame forcing his knees up around the desk on each side like knobby white hills bookending a woody plain. Blanca walks around the room, guiding the discussion –asking the students one after the other to contribute details—and come up with alternative greetings and closings in the few minutes they have before the day is over and the details fade from memory.

After the students put their writing away and place their chairs on of top their desks, they are dismissed and flow with the rest of the school out through the main entrance to begin their weekend. Blanca thanks both of us for our help today and in general, mentioning that she doesn't know what she will do when Olimpio and I are no longer there to help her. Olimpio leaves and Blanca says that she has another intern coming for the end of May.

I say goodbye and walk down the hall to peek into Ms Ortiz's classroom through the narrow window built in to her door. The room is dark, the chairs are on the tables. I walk down to the office to sign out. Today I have to hunt for my name among the pages of visitors who have signed in to perform, assist, and attend the rally. Exiting through the main doors I spot Ms Tamboril leaning against the ramp railing in the shade under the

canopy, her wings off, but her black costume ears still sticking out of her head. She sees me and laughs.

You tracked me down, she says, her voice raspy.

It's been quite a day, I say.

By 10:30am I knew it would be a long one.

Good for everyone but long, she adds.

I have needed to schedule an interview with her for the last month or so. I ask about her research for her doctorate at Regional State University. She tells me about her committee's propensity to meet together, about the IRB concerns she has had to work to overcome in order to collect data on her own campus.

She agrees to be interviewed at 11am the following Wednesday saying that she thinks her voice will be back to normal by then.

I told them, no more cheers.

Queue the readers I joke.

She laughs, and I head around the side of the school and up the embankment to my Corolla. I open all the doors to let the heated air trapped inside escape. I'm starting to feel sick. By the time I make it home, I already have an email from Flor asking to switch our meeting to 9:30am. Days later it is rescheduled again, pushed back into the first week of summer vacation.

Welcome to Magic Camp

At a quarter after eight in the morning, I walk down the hill from the street where I parked my car, a closer spot than usual, though earlier than usual too. In the outside entry, I pass a few adolescents outfitted in egg-shell colored polos, khaki pants, dark

tennis shoes, and neon shoelaces. Above them is a banner that says, *Welcome to Magic Camp*. I press the button to get buzzed into the school and look out toward the street.

Would you like to get in? says a similarly clad adolescent, though his polo is red and black with a white basketball-sized *Magic Camp* iron-on patch on the back. He holds the door open as the magnetic door release is activated by someone in the office.

I thank him and go in. Inside the entryway, next to the auditorium is a table with another sign welcoming participants to magic camp. The people gathered around the table smile at me, teeth just showing past a gray beard, smiles that reach the eyes of college age faces. In a moment, I decide the man with the gray hair and beard runs the camp and the others gathered around him work at the camp.

On the table I notice a clipboard, some printed pages, and a few Magic Camp tee shirts, a mini Dasani water bottle and an action figure with his arms out in front of him—a fortune cookie fortune stretched between them. Stacked higher than the table are boxes, mostly unopened. A number of lunch totes are piled under the table. I smile and walk past on my way to the office.

No need to sign in during the summer? I say to the attendance clerk sitting at the far desk, the counter separating the front office work space from the public area is devoid of its substitute and visitor binders.

No, she says, *who are you here to see?*

Ms Tamboril at nine.

You're early.

I nod.

So there's a magic camp going on?

Yep, two weeks, the kids come from all over.

I head toward the library; if it's open, I'll eat my breakfast there while I review the interview questions and the transcript from our first interview. The fire doors separating the sloping hallway from the annex beyond it are closed but open easily when I push on them, letting me in and a pillow of warm air out. A retractable metal security partition hangs a third of the way down from the ceiling just beyond the library entrance. Equipment lines the length of the halls beyond it. I tried the library doors, locked. I grab a chair and head back through the fire doors and into air conditioned splendor.

I find a normal-sized chair, set up my laptop, get out my breakfast, and begin reviewing Flor's transcript from our last interview.

Noticing that it is a few minutes before nine, I shut down my computer and walk up the inclined hallway to the office.

The attendance clerk, Ms G, looks up as I enter the office and says, *Ms Tamboril will be right with you, she is taking her niece to the restroom before you get started.*

I ask Ms G about the Magic camp. She tells me that her two sons went to the camp when they were younger. They are in high school now she says, one a sophomore and the other a senior in high school.

He just doesn't know what he wants to do, she says in reference to the elder of the two, she continues saying she hopes he starts out at a local community college. Her daughter, she explains, spent two years at Another Flagship University studying bio-chemistry but dropped out because it got too hard and she wasn't at the top of her class anymore. Now she's going to a technical institute finishing up her pharmacy technician's certificate and getting ready to start working.

Ms Tamboril pops her head in the front office, just a second, she says smiling at me and then looking down at the thigh-high girl in a tee shirt and shorts standing next to her. Flor is wearing a blue, green, and brown silk blouse with matching lacquer spoon-shaped earrings and khaki shorts. Her close-cropped dark brown hair with light brown highlights is longest in the front where the bangs sweep from left to right across her forehead.

No problem, I say smiling back and waving to the girl.

Come on, the girl says looking up at Flor; *we have to get back to work.*

A few minutes later Flor returns carrying a coloring book and some crayons, her niece walking beside her goes right up to Ms G who is on the phone and starts talking to her.

Here, says Ms Tamboril, pointing to a spot on the carpet, dropping the coloring book and crayons, *you can sit here.*

Is it okay if she is out here? She says to the other front desk person who nods.

She looks down at her niece, *you can sit here while I talk to that man,* she says pointing at me.

We enter her office and sit down at a small table. I ask how her doctoral research at Regional State University is going. She describes an IRB snag requiring a lengthy email thread and two meetings. She thanks me for asking and I press the record button on my digital recording device and we begin the interview.

At one point, her niece comes in to get her banana and juice, I pull a banana from my bag and hold it close to hers, comparing them, then I hold it up to my ear and mouth, pretending that it is a telephone, she smiles and laughs.

As we finish the interview and I turn the digital recorder off, I attempt to describe the power and potential of the campus garden in Laurie Thorp's ethnography The Pull of the Earth. In it, I say, she writes that teachers don't want or need another curriculum, it's not what they are looking for. According to Thorp I continue, they are looking for lasting relationships.

I'm excited about the possibilities of the computer lab at Zapata being like a plot of ground that just needs some sun. It might be a cloudy day and not a sunny day but something that might benefit the school.

Flor nods and continues to make eye contact as I outline my contributions to the school over the past year and hopes for continuing and expanding my relationship with the Zapata community. I conclude by stating that I'll approach her in a more delineated

way in the future. She smiles, we shake hands, and I back out of her office running into and tipping over a chair in the process.

Walking out of the office and toward the front doors, I notice two Magic Camp counselors sitting at the camp sign-in table. Both wear white camp tee shirts under their black and red camp polo shirts. I ask if I can take their picture. *Sure*, they say, telling me as I get my camera out that the camp runs all summer on several area campuses. Once campers turn twelve they can become helpers and move up the ranks. I take their photo with my Sony digital camera, thank them, and head out of the school.

LINE 2 EARHART

Figure 17: Map of sections in the Earhart line.

Figure 18: Alternative map of sections in the Earhart line.

Blanca Calling

Two days after dropping off fliers soliciting participating teachers on my initial school visit, my cell phone vibrated to life at about nine o'clock on Sunday night, not recognizing the number, I answered hoping for a teacher.

Is this Jason Olmanson?

This is Justin Olmanson

This is Blanca Villa and I just wanted to call and take care of this before the Thanksgiving break to learn more about the research. There was a flier placed in my box.

I told her about the research and she asked about the interviews, how many, how long...

Several, I replied, *each lasting about an hour*.

We agreed to meet the next day during her planning time at the end of school to go over the consent form and any questions she might have. There was a pause, and I mentioned that participating would not entail any additional electronic devices or supplies. That was fine with her, she said. Though she did mention the iPod program, Alejandro had contacted her initially and then not returned her latest emails.

Dragons, Dolphins, and Changos

Three days later, I enter Jasmine Saucedo's bilingual 3rd grade classroom at 8:55AM to find students bent over worksheets. I quickly walk across the room and take a seat next to two different student groups. Each student has a sheet of paper with the top three-quarters filled with English text. Each sentence is numbered and some of the words are written in bold letters. The question below the text requires students to identify the correct sentence number or word. There is another passage-question dyad on the reverse

side of the page as well. Both passages are about the weather. According to the instructions they need to predict, based on the facts contained in the passages, if the people in the passage would be eating inside or outside.

Students draw lines and circle sections of text as Ms Saucedo, dressed in jeans, a dark blue Zapata Elementary 70th Anniversary long sleeve tee shirt, and black and white Saucony tennis shoes, marks up the copy projected on the screen in the classroom. After going through the clues and circling the salient parts of the article as a class, they read the question and take time in the darkened room to look for the answer.

From my stool next to the computer table, I hear pencils scratching against paper, feet kicking chair and desk legs, chair legs scratching against the wood floor as legs move bodies closer and farther away from desks, a whispered suggestion to '*write it down*', the steady hum of the projector, the sonic whip of the condenser engaging followed by the rumble of the AC unit, and the intermittent clinking and clattering of pencil sharpeners and other plastic items falling out of their open desk cubbies.

At the end of the activity, Jasmine switches the projector off and announces that today is their aide's last day working with them. A handful of sighs go up from around the room as faces turn toward him as he stands near the door, pitching forward on the balls of his feet, his mouth open in a tight smile revealing metal braces.

Ms Saucedo switches on the lights and students begin their 'center' time. Around the room are a number of centers and depending on the day or the time of day, members

of the Dragons, Ballenas, Playa, and Longhorns groups go in different directions to begin their center activities.

The students at the Reading for Comprehension center pick their folder out of a large plastic container. They are to complete the next activity sheet in their folders. For today's sheet, they need to (1) come up with two sentences using five words from the word wall without repeating any of the words, (2) write the sentence, checking for punctuation, (3) show it to Ms Saucedo, (4) add a picture in the box next to the blank lines.

At the Reading Fluency center, students break up into groups of two, reading aloud as much of a passage as they can in one minute's time. Once they finish, they mark how far they read and then count how many words they read in that time span.

The theme at the Nonfiction Reading center is animals and habitats. Students sit on the floor under desks, in the library area, and under the whiteboard. The larger group breaks up, but no one reads alone, they whisper and point at images of animals.

The group answering to the name Dragons walks over to Ms Saucedo who has taken a seat at the kidney-shaped table back by the AC unit. She reads and they follow along, the words and sounds tumbling involuntarily out of their mouths. She pauses every few sentences to ask questions about the passage she is reading as well as to address the comments and queries coming from individual members of the Playa, Ballena, and Longhorn groups.

The intercom beeps four times, *May I have your attention please*

[silence]

There is a silver firebird parked outside with its lights on, silver firebird with its lights on.

A sneeze, page turning, students getting up take a different book back to their reading area under their desks, others getting up to read words off of the word wall. Some focus on writing their two sentences, some create their picture first, a few ask Gabriela to draw their picture and then color it in with crayons, colored pencils, or markers –the lines meant to hold their sentences still blank.

87, Mayra says in a whisper loud enough for me to hear halfway across the room

90, Jose says

No way let me test you, I'm counting the words.

No I'm counting.

Girls sitting in the library area, shoulder to shoulder, their backs against the wall, their laps full of open books about monkeys nested within open books about monkeys.

Look at the changos

Ay que mono

Laughter, reaching for other books, page flipping, pointing, no one reads alone. Isaac and Omar read a Babymouse book under Isaac's desk, each holding a copy.

Look at the chango [monkey] Ms Saucedo.

!Que changos tan interesantes! [What interesting monkeys!] Jasmine says looking at me with bright eyes.

Ms Saucedo I'm done.

Am I done?

Boys and girls, don't use markers to color your pictures, she says holding the up the word wall sentence sheet, it is double sided and the marker has bled through, obscuring what is on the other side.

Is this really just a minute? Ms Paloma says holding up the two-inch tall cylindrical plastic hourglass timer so Jasmine can see it.

It's a minute five or a minute seven, something like that.

No way.

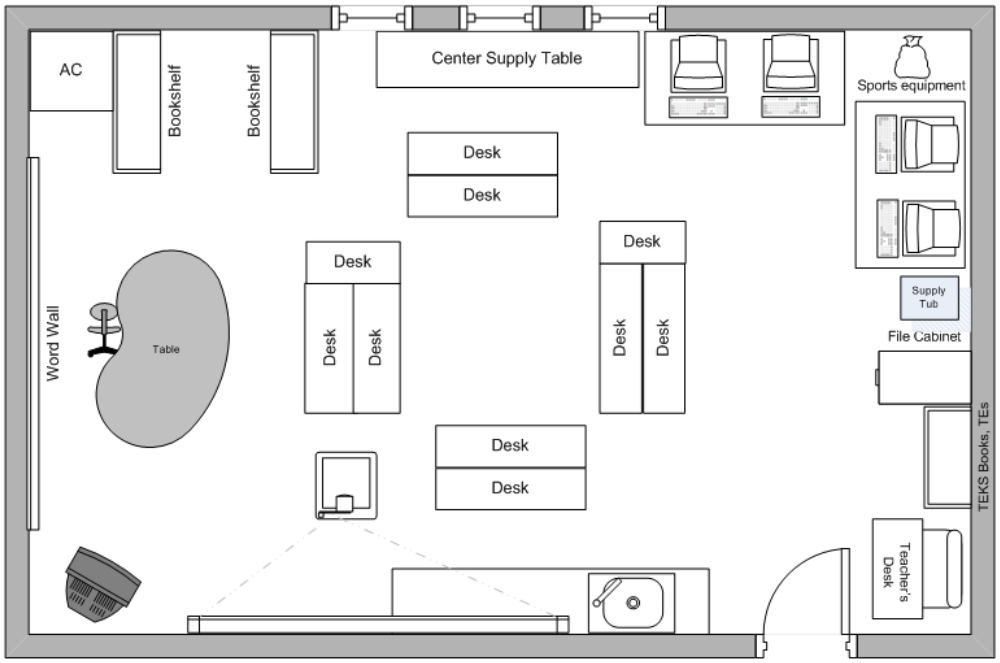

Figure 19: Layout of Ms Saucedo's Classroom.

At 10:05am I left Ms Saucedo's room, walking down the second floor hallway, past the floor-to-ceiling map of the world, past the empty computer lab, to Ms Ortiz's 4th grade classroom. I let myself in and sit on a stool next to the computer tables.

Written on the white board is a list of the classroom group names. Next to each name are tally marks:

Dolphins |||,

Mustangs ||||| ||||| |,

Cowboys ||||| ||, and

Aguilas ||||| |.

Below this, in the middle of the whiteboard in blue dry-erase marker is the day's writing prompt.

Escribe una composición acerca de una aventura [Write a composition about an adventure].

Underneath the prompt and affixed to the whiteboard with a piece of masking tape is a piece of paper that begins: *Antes de escribir, brainstorm* [Before writing]. Next to this is another piece of paper taped to the whiteboard with an outline of a radial map drawn on it.

Students bent over their papers make alternating rustling, scratching, and brushing noises. Rustling as they flip between the brainstorming and radial map outline they made to help facilitate their story writing, scratching as they write the next few words whispering each aloud as they wrote it, and brushing as they wipe the eraser remnants where they rubbed off a misspelled word or ill-worded phrase.

Not quite drown out by the AC unit, a classical arrangement floats out of the boombox near the kidney shaped table, filling in the quarter notes between whispered words, scratching, wiping, and page flipping with bits of melody from an organ and string quartet ensemble.

Ms Ortiz, wearing a white sleeveless cowl-neck sweater, her hair pulled back into a bun, and large silver hoop earrings, sits at the kidney-shaped table facing a student in a red tee shirt and tan shorts who, pencil in hand, is bent over his own paper. Ms Paloma is

here too, sitting with a student at a smaller table next to the kidney shaped table, examining his eraser.

To my left, a girl with a pink and violet flower in her hair puts her pencil down and shakes out her fingers. She raises her arms over her head crossing them at the wrists, fingers interlaced; she arches her back, her chin pointing toward the ceiling.

Ms Ortiz tells the students to close their planning and writing notebooks, it's read aloud time.

We need some of these, says Ms Paloma leaning over toward Ms Ortiz and showing her a white and blue *Pentel* high-polymer eraser, *they leave no marks, perfect for the TAKS.*

Ms Paloma leaves the room and the students gather round Ms Ortiz's chair near the classroom library. They sit close to each other on the floor, one student on each side of her and the rest two deep in front of her.

Is he going to read with us? a girl asks looking in my direction as I move from my chair next to the computers to one nearer the library.

He's going to listen.

Virginia spends the first five minutes asking questions about what has happened in the book so far. They are about three fifths of the way through Esperanza Rising, by Pam Munoz Ryan. I notice a poster in the corner titled, Esperanza Rising Predictions with sticky notes affixed to it.

Where did we leave off?

What were your predictions?

What could happen next?

As she begins to read I notice that there is more than just Ms Ortiz's copy of the book. Students in groups of two and three are following along together in one of four other copies of the book. Instead of looking on with classmates, some students look up at Ms Ortiz or down at their feet, or alternate. Ms Ortiz reads a paragraph. Esperanza has just started working for the first time in her life, cutting potatoes for planting while her mother is convalescing in the hospital.

Why did it say that the grape vines were naked? she says, *What does that mean?*

Many of them laugh.

No leaves is the consensus.

No underwear, says a boy sitting on a pillow, wedged between one of the library bookshelves and the wall.

Go change your color, she says, he hesitates, she turns back to the book as he gets up.

Why is she sad?

Can anyone make a connection with that?

We finish the chapter and before closing the book and getting the students in line for lunch, she notes that the next chapter is called, Los Aguacates [The avocados].

Walking down the hall on my way to the library I see Ms Saucedo standing next to her students as they take turns using the restroom. I ask her what is wrong with her computers and she says that one has an issue with audio, another plain doesn't work, and a third has a collection of issues. I asked her to place a sticky note on each of them stating as much and I would try and get them working again. She thanked me, and I continue down to the library to type up notes.

The night before, I received a call from Blanca Villa, a fifth grade teacher who was interested in being part of my research. We had agreed to meet in her classroom during her planning time right before school let out. I had some trouble finding her room as it was right next to Jasmine's third grade classroom leaving us with just a few minutes to meet before her students returned from special areas (Art, P.E., and Music) to gather their backpacks and jackets to head out or settled in to work on their homework. We talk about her class and my research. She had dark brown shoulder-length hair and wore a dark blue tee-shirt with the word NAVY written in bold yellow letters across the front. As her students return, quickly filling up the room, she breaks off our conversation.

If you want to hang out for a few minutes Justin, we can continue our conversation once I get everyone settled.

Sure, no problem.

Students taking the bus are dismissed first, followed by car riders and walkers, each group placing their chairs upside down on their desks. Blanca addresses the few students staying to finish yesterday's homework.

Ernesto and Enrique, next door there are a couple of cute Flagship University tutors to help you with your homework, why don't you go over there and finish it up, it'll probably go faster.

As they left, Blanca explains that she teaches Language Arts and Social Studies in a departmentalized 5th grade classroom, seeing one ESL and two bilingual cohorts per day. She also mentions how much she likes having researchers in her classroom.

I'd like you to let me know how I can improve my teaching. You should know that I'm involved in another program now as well via the WeTeach program.

I tell her that is fine with me and she goes on to mention all the dates coming up that would be, in her words, *no good for observation* because of field trips, benchmark testing, and school assemblies.

That's okay, I think we can work around this, I say before thanking her and heading home for the day.

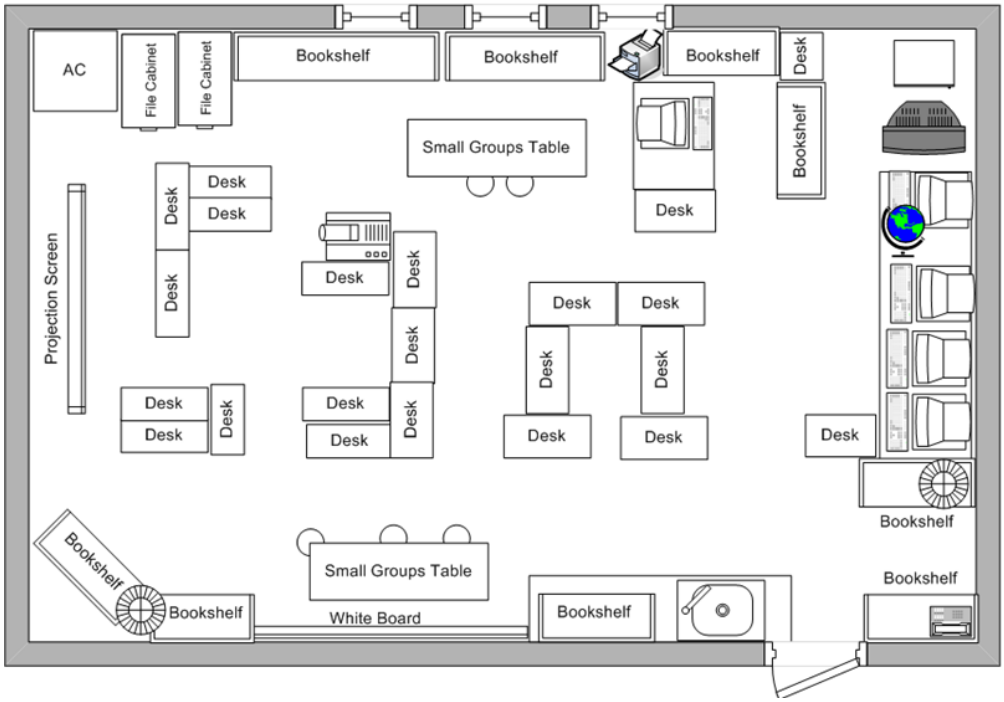

Figure 20: Layout of Blanca's Classroom.

Section in search of a title

After signing my name and making a name badge for myself in the school office I walked down to the library.

Maggie was shelving books when I came in; she invited me to a play in the school auditorium that same afternoon for kindergarten through third grade students put on by Flagship University theatre students. I thanked her, saying that I would be observing in Blanca's classroom in the afternoon.

She's a great one to observe, she said, *did you know, she's National Board Certified*.

Walking out of the three-foot high stacks and over to her office she picked up a book and held it up.

You should take a look at this, she said, motioning me to meet her by the checkout counter. She handed me a book titled *Redefining Literacy for the 21st Century* by David Warlick. I leafed through several pages while she went back to reshelving.

Thanks, I say, setting it back on the checkout counter, *I wrote down the title.*

If you wanted, you could always borrow it.

I take a seat in the front part of the library at one of the computer tables. My goal for the day was to pick up what I hoped would be signed consent forms, schedule initial interviews with each participant, and observe briefly in Ms Saucedo and Ms Villa's rooms.

A few minutes later, I walked up the hall and up the stairs to Ms Saucedo's classroom. They were reading the second of three passages at the top of a worksheet on making inferences and predictions. Each student had a copy of the worksheet which was in the process of being underlined, circled, and generally marked up to varying fidelity with the transparent version Ms Saucedo was working from atop the overhead projector, its image displayed on the pull down screen covering the white board. The last time I was in the room, she was working on inferences in small groups.

As Ms Saucedo's students got in line to go to their special area, I asked her if there was a time she'd be willing to meet to do the first interview.

We could do it on campus or off, during the school day, afterward, or on the weekend, I said.

Could we do it during my planning time?

We agreed on meeting next Tuesday during her planning time.

I said goodbye to Ms Saucedo and walked one door over to Blanca's fifth grade departmentalized classroom. Her instructional day consisted of three ninety-minute language arts and social studies blocks, one non-specialized, one ESL, and one bilingual student cohort. As I entered her room, the second block was about to begin. She was standing next to the LCD projector powering it on and hooking it up to her computer one desk over, the cord between the projector and the computer dipping down six inches between the two desks.

She was wearing a tee-shirt with the word ARMY written across the front. As she brought the image coming from the projector into focus by rotating the adjustable lens, she began saying that the thank you letters they were writing needed additional editing and consequently each student would be expected to write out a new and improved draft of the thank you note they would eventually send to the site facilitators of their last two-part field trip; the guide at the Heliodon Materials Lab and their docent at the Blanton museum.

The screen displayed just such a thank you letter written in MS Word with the *show formatting* option selected and in need of editing. The writing contained several

different spelling mistakes. As a class, they went through each one as she explained or let the students decide how to fix each issue.

Now look, Heliodon has a red squiggly line underneath it but it's spelled correctly. Why do you think that is?

…

That's right, it's a proper noun. Heliodon, hmm Mr. Olmanson is, does the prefix helio come from the Latin or the Greek?

Greek, I said, thankful for the grapefruit question and impressed by the subtle introduction and positioning of me by her as someone capable of answering such questions.

She went on to other misspelled words, demonstrating different suggested spellings as the students she called on gave them to her, typing each one into the document and highlighting salient word features.

Look at this word, greatfull. What's wrong with that? Look it has great and full in it and both are spelled correctly? What do you think?

After working through the body of the letter, she typed Olmanson into its close. Turning to face me she asked,

Is it spelled correctly Mr. Olmanson?

Yes it is.

But look there's a red line underneath it, hmm who has an idea?

…

It was decided that more obscure proper names were unknown to the computer. She typed in some of their names to test them out. Some passed, some didn't.

During our first meeting, I had offered my services. I was interested in participating as well as observing, if and when she deemed it appropriate I'd be happy to help out. *After all*, I had said, *you should get something out of it, and your kids should too, some tangible benefit for them.*

That's great, she said, *I'll take you up on that.*

She unplugged the computer from the projector and moved over to a long rectangular table on the other side of the classroom. Instead of chairs, she had Union Pacific cylindrical five-gallon plastic coolers turned upside down with old pillows strapped to the top of each.

Okay, if some of you have, when you are done with your drafts or when you think you are done with your draft some of you can take it over to Mr. Olmanson and he can help you.

After a few minutes, I had several students mulling around my chair by the computers, waiting for me to look over their thank you notes or to ask for help with spelling. I logged into the computer next to me and opened up MS Word. I sent anyone with a spelling question over to the computer to type the word, press the spacebar and wait to see if a red line appeared. I showed one student how to right click and check the suggested spellings for the one that looked like the word she meant to spell.

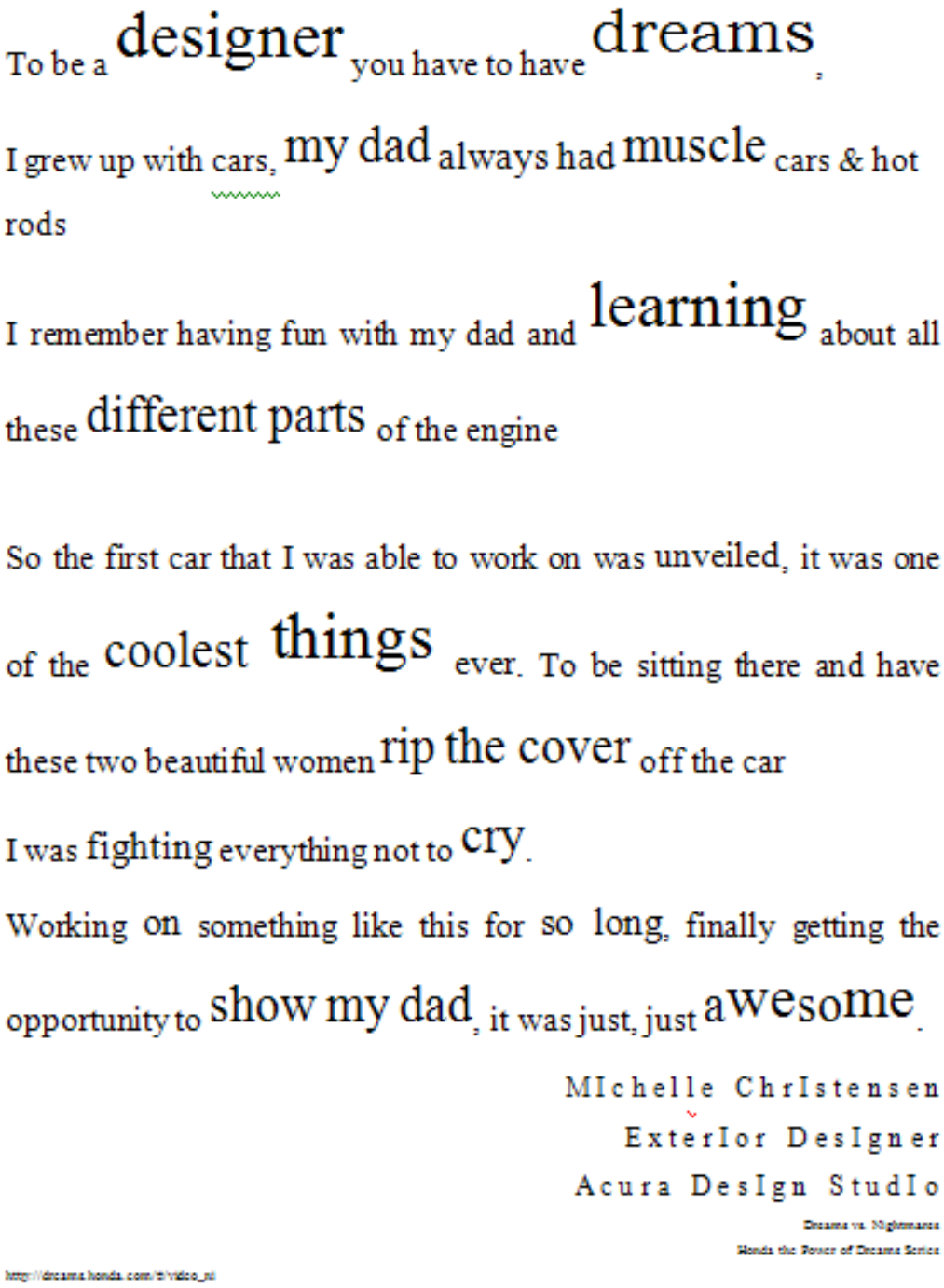

Figure 21: Societal discourses about technology.

It's your job to teach the next two students who help with spelling, I said to her once she had done it successfully. After she had shown two students how to do it, they would be responsible for the next four and so on.

With spelling questions out of the way, my line was made up of students with grammar and writing structure issues in keeping with the letter Blanca had shown.

The next time I looked up at the clock, an hour had passed. I had written down just a few words to remind me of what had just happened but I felt like I had been part of what was going on.

After making some quick jottings about what had happened so far I walked down the second floor hallway past the empty computer lab to Ms Ortiz's classroom. She was alone, her students in their special area class. She gave me her signed consent form, and we worked out a day and time for a first interview before her students returned and I was due back in Blanca's classroom for the next language arts and social studies period.

When I returned to Blanca's room, her students were lined up outside the door, poised, Blanca told me, to join the rest of Zapata's fifth and sixth graders in attending an informational recruiting session in the library led by a representative of Hightower Math, Science, and Liberal Arts Magnet Middle School.

At the direction of the Hightower Middle School representative, the fifth and sixth graders sat in a semi circle on the floor in front of a TV on a double-decker wheeled cart. Initially, I take a seat at a computer table behind the TV screen; however, as students continued to come in and find seating, I started to wonder if my position could prove

distracting for some in the audience. As the final class was filling in the few open spots on the floor with a clear view of the television, I made my way to the overstuffed chair and ottoman in the opposite corner of the library closing my eyes and listening.

Once everyone was seated and the woman had introduced herself, she started the video, the audio to which described the school and academic experience. According to the speaker, students could receive high school credit for up to three courses before entering the ninth grade. When the video was over, I got up and walked toward the front of the room to get a view of the rest of the presentation. The representative moved from her position behind the students to stand one alongside the TV and reiterated some of the information on the video while working in statements like,

We hope you can see yourself at Hightower.

If you can imagine yourself being happy at Hightower…

During the Q&A period, in between moments of silence, she fielded questions like,

Did you have a football team?

Are they any good?

Where was the school?

Were there busses?

Do you accept everyone who wants to go there?

Do you have art? Band?

On the way back to Blanca's room, I ran into Principal Tamboril in the hallway and asked her if there was a day when she would be available for an interview. Monday at nine AM she said.

When I made it back to Ms Villa's classroom, she was connecting the LCD projector cable into the back of the computer to show a PowerPoint presentation she had created on the history and technology of writing and printing. Stationing a student in front of her computer to advance the slides on her direction, she moved around the room, describing why she had chosen a particular image or explaining the significance of particular advancements in the history of writing.

You'll be talking to Ms Tamboril if you keep that up, she said to a student persisting in talking with his neighbor to the right in the semi-darkened classroom.

When she wanted to call her students' attention to a particular element on the screen, instead of using a ruler or laser pointer to highlight the element, she would stand off to the side of the screen and stretch out her arm toward the area she wanted to highlight. In her hand she held a piece of white paper inside of a transparent plastic sleeve. Holding the paper parallel with the screen and about six inches in front of it had the effect of magnifying that part of the screen. Looking around the room I could find no behavior system, no colors to change.

The Golem

On my second visit to Blanca's 5th grade language arts classroom, I arrived just after her third group of students sat down for their 90-minute literacy period. At the back of the room, next to the audio visual cart, stood Blanca's university student intern, and in a blue molded plastic student chair, a woman with shoulder-length black hair wearing tweed pants and a red sweater clutched a clipboard.

As I sat down Blanca began reading the first part of the story of Golem –a legend about how a shapeless man-like creature was conjured out of clay to protect Jews from persecution in the ghettos of 16th-century Prague. After reading a page, she would pause and show the students the illustrations before continuing. About halfway through the book, just after the part where Rabbi Loew conjures the Golem, Blanca stopped reading, put the book down, and passed out a worksheet, the top of which contained a passage from the page they had just finished reading. Below the passage was a dictionary-like excerpt listing several viable definitions of the word *'spell'* found in the passage followed by four lettered choices –one for each of the definitions. After everyone in the room had a copy of the worksheet, Blanca read the instructions and first question aloud. The students were to use the context given by the printed text, as well as the story of Golem in general, to help them identify which of the listed meanings of the word *'spell'* best defined its use in the story.

Mr. Olmanson, would you mind being the scribe? she asks.

I agree. I'm already sitting in front of her computer on the right-hand side of the room. An external VGA cable dips only slightly as it connects her computer on the right-

hand side of the classroom to the LCD projector positioned seven feet away. The cord passes over the corner of one student desk. The shadows of several heads block out parts of the bottom of the pull-down screen standing on three aluminum legs in front of the storage closets. I take hold of the mouse, my observational note taking device on my lap.

Each time the students eliminate a choice, I as the scribe, decrease its font size or place a ☹ face next to it.

During every class period each student has to answer a certain number of questions correctly to get their 'A' for the day. As they reach their daily quota, Blanca moves a popsicle stick with their name on it from one plastic cup to another. As we near the end of the activity, few popsicle sticks have made the journey. Blanca pushes them to do one more question saying:

Let's look at this last one.

...say that louder

I can't hear what [Inez] said. With the lights off I can't see lips or eyes very easily –mostly bodies, arms, heads and hands. I see a few straight backs supporting heads turned toward the projector screen; I see some heads resting on outstretched arms resting on pushed-together desks. I see other faces resting on desks –their worksheets more pillow than learning tool. I see some chins in palms, some palms on foreheads. I imagine some eyes scanning worksheets, or closed, or looking rebelliously at each other, or at me, or at Blanca, or out the window. I see some noses near worksheets, some pencils in hands, some erasers in others –surface testament to on-task behavior.

So he went through the river? Well they formed it near the river; right so maybe he did go through the river we don't know that because it doesn't say it right? But remember we do need evidence from the text, what do you think Stacy?

[Inaudible]

Well that's the same, so I'm going to stop reading here, let's look at this last one together and then we'll finish it tomorrow. So when they talk about the spells from the Kabala, in what sense does the word spells mean?

Richard you raised your hand, your popsicle stick was here.

[Silence]

Which one do you chose and what is your reason?

Richard: *B?*

I type Richard's name next to B and highlight his choice. Blanca continues,

So D says, B, I'm sorry, a word or several words that have some magical form or words that have some magical power in incantation. Amy do you agree or disagree with him?

[Inaudible]

The Golem, so you see power as being a context clue. Gustavo, your popsicle stick came up what do you think?

Gustavo: *Yeah I agree with B.*

Because?

Gustavo: *Well because it wouldn't be um C because it's like a spelling word.*

Okay so C is just spelling the word. So you're thinking B is correct?

Gustavo: *Um yeah*

That's one more thing I'll mention and then we can finish this up, okay we've talked about five ways and Gustavo just mentioned the sixth way of figuring context clues, you know about read around the word, you know explanation, you know about the definition, what are the two that we've been talking about, Cynthia?

As Blanca and her students list these I type them in a separate notepad window on the screen showing up on the display.

Cynthia raises her hand, *Little word and the big word?*

The little word and the big word we use that constantly. Cindy? Brenda?

[Inaudible]

That would be with the explanation Blanca says shaking her head.

Carry?

[Inaudible]

Using the definition to replace the word Blanca says as if verbally checking it off of the list.

Carry: *Context clues?*

Okay all of this is context clues, breaking the words apart and the last one that Gustavo just explicitly mentioned that we haven't been doing is when you're not sure you go and eliminate the other ones.

Yes, the way I see it is like going to the ice cream store, okay, you go to, oh I don't know what's an ice cream store? Amy's or the Marble Slab or Baskin Robbins which

doesn't exist anymore but they used to have 31 flavors, well when you go there don't you already have kind of an idea of what you want?

… [more silence]

Okay, I know I don't like chocolate, Richard, so I can eliminate the chocolate flavors, nothing's wrong with chocolate it's just that I don't like chocolate ice cream. Maybe I'll have strawberry or maybe I'll have vanilla which is what I always have but I can say, 'you know what, C is not the answer.' Okay, I know A is not the answer because he is not resting. So now I know I only have two out of four left. Is that a better chance of my choosing what answer could be correct?

Several students: *Yeah*

Yes, so that is now six ways that we discussed about, looking at context clues, questions?

[Silence]

Okay, tomorrow we'll finish the book, um put this handout please somewhere where you're not going to lose it preferably your purple reading folder...

I save and close the MS Word document…

Leaps and Bounds

I made the ten minute drive over to Zapata Elementary on a Friday afternoon for the express purpose of interviewing Blanca, who had rescheduled our semi-structured interview session to coincide with her end-of-the-day planning period at 2PM.

She had just finished teaching her only 90 minute block of language arts of the day due to an all-morning fieldtrip. The entire 5th grade had taken a fieldtrip of sorts to Hightower Math, Science, and Liberal Arts Magnet Middle School. As I walked in and took a seat, Blanca, wearing a matching gray fleece skirt and sleeveless blouse accessorized with a black pashima scarf, was rehashing the experience with Ms Blanchet, the science teacher, who was leaning against the doorway, picking at the half-dried plaster covering her hands and forearms.

I mean we need to call them and let them know that if that's how it's going to be, that we're not going back next year.

I know, all that woman did was point and say, 'there's the gym', 'there's the lab'.

And the kids didn't get to hear from any of their students except for the two who shouted 'Hightower Sucks' from the stairs.

Okay, I'm going to go get this stuff off of me, said Ms Blanchet straightening up and walking out of our field of view.

Turning her attention toward me, Blanca sat down at the student desk facing mine and we began what would be a twenty-six minute interview. She had a band-aid on her left middle finger and a Payne's grey hue of overhead projector ink was rubbed into the back and sides of her right hand. On her left wrist she wore a thick brass watch.

I hate how cliché it sounds but I am a lifelong learner, being the oldest in my family it was always about learning before my brothers did so that then I could

end up helping them out but it's just who I am, I'm very curious as a person and um so consequently teaching is a vocation it's something that just resonates with the person that I am.

I was born in Laredo, TX [but] I was raised in Chicago and every weekend there was always something that my parents took us to, whether that was a museum, the aquarium, a carnival.

I was the only girl of six children and what I always heard was 'your only way out is education, if you want to raise a family you've got to make something of yourself. We were all told, 'you will have two options after high school, because you will get your diploma, it's either you go to an Armed force or you're going to go to college, we don't know how we're going to do it but you're going to go to college'.

There seems to be this big blur between where they're living and Mexico and I want to bridge that gap to them, there's 250 miles between Austin and the border. What do you see along the way? What have been your experiences that you bring that enrich what you are learning?

I'm a visual and tactile learner, I've always been really jealous of people who are auditory learners.

I remember my father coming and talking to my reading teacher and the reading teacher told my father that I didn't know how to read and I remember my mother getting very upset saying, what do you mean? Why didn't you tell that teacher that she can read? She reads everything at home.

Literacy goes beyond just reading the words on the page to knowing how to maneuver, not just in the world around you but in different worlds, and you know in terms of societal rules and places that you go.

Technology in my life is something that I want to let in but I'm afraid that it will take over, so until I figure that out sometimes I tend to stay away from it even though I want to incorporate it in my life.

Technology is a field that grows by leaps and bounds daily, it's like okay, if I don't do this now I'm going to be so much further behind, but at the same time if I go then it's just going to bring more and more. It's something that I'm learning how to incorporate in my life.

They [kids at other schools] are way ahead of these kids and if I don't at least assist them to at least understand the technology by the time they get their hands

on it they're out of the rat race and I feel that burden of education, of presenting [technology] to my students.

Why are you here?

I arrived on campus a little after nine on a Monday, walking up to Blanca's classroom as the fifth grade math, science, and language arts teachers exchange groups of students. From 9:25 until 11:05 every morning Blanca meets with what she terms her moderate needs reading group. She explained that she breaks the block up into sections of vocabulary, whole group instruction, small group work, and social studies.

Standing in the doorway in a red embroidered v-neck blouse and black slacks, Blanca looks at the line of students holding notebooks, pencils, and the odd book in their hands. Some students are leaning against the wall, others face each other instead of the front, those that forgot pencils go back for pencils, others arrive on their own time having gone back for pencils, notebooks, or contraband. Gradually students stop leaving and arriving, the leaners straighten up, and the talkers turn around to face Ms Villa who motions for them to enter the classroom. As they walk by, she gives them each a worksheet, a handshake, and verbal instructions to copy down the homework written on the white board.

A few minutes after everyone is seated a beeping noise emanates from a small digital timer.

Today we are studying words with 'ir', she says beginning a spelling test. She works current events, content knowledge, and technology tidbits into the usage examples for each word she reads, walking between the desk groupings.

After the final spelling word, *Blur, adjust the projector when it is blurry.* Blanca flips on the overhead projector showing an image of the same worksheet she handed out at the beginning of class. In the upper right corner of the image is the work *Prediction*.

Read on your own, she says before helping one student read the passage and then going from table to table checking in with other students.

Diego are you finished? she says looking at a boy who looks up and nods. Standing next to the overhead projector, Blanca leads the group in underlining different sections of the passage.

She reaches into a plastic cup next to her, pulling out a popsicle stick, looking at it briefly and then calling out a name.

What's going on with him?

[inaudible]

Is that in the story? We cannot predict if it is not in the story.

What happens when you get hungry? she says reaching in and pulling out another popsicle stick and glancing at it.

Jasmine.

…

Went to the bathroom, she says putting it down before selecting another stick from the cup.

Samantha?

Your stomach starts to growl, she says.

You get mad, says another student.

Blanca nods, placing two popsicle sticks on the overhead representing, *the two ways hunger changes you.*

He's walking faster because he's thinking about food. He is no longer watching where he is putting his feet, she says.

What might happen next?

His foot might get stuck.

He'll fall down.

He might get into a trap.

What do all these things have in common, she says as she writes their ideas on the transparency.

He could get hurt, says a student.

A woman pokes her head in the doorway,

Pull out, says Blanca and five students head out of the classroom. The rest of the class continues working through the activity on prediction for another ten minutes before

beginning a class read-aloud session. During the transition, she asks me to use her computer to find and juxtapose two different images of food service workers, one in a clean, pressed white apron and uniform, the other wearing an apron with burn marks and grease stains with the title, *Compare, Predict, and Generalize*.

Blanca reads *Yanni Rubbish*, a book by Shulamith Levey Oppenheim about a boy in rural Greece who takes over his father's garbage collection route while his father is in Germany. Every few pages, Blanca stops reading and asks her students to ask questions and elicit predictions. When the children his age make fun of him when he passes through town collecting waste in the back of an old wagon pulled by a donkey, the students try and figure out how he might be feeling, what his options are, and what they think he will do next. On certain pages of the book, yellow sticky notes cling to the margins.

By 10:25AM, the story is finished and Blanca begins small group work at a rectangular table. A handful of students walk over and pull one of the Union Pacific ice chest cylinders out from under the table and sit on it. She tells those not sitting with her or in pullout to get a Back Jack and read. Students walk over to where I'm sitting and reach into a blue plastic recycling tub stamped with the district's initials to pull out what looks like a cloth legless chair with a tubular aluminum frame with an 'L' shape. In groups of two and three, with their books in hand, they find an unoccupied corner of the classroom and unfold their reading lounges, sitting on the bottom part of the 'L', leaning back on the top section giving them back support.

As I am sitting in my chair, looking around the room and taking notes at the same time, a girl in a purple sweater turns to me and says, *cool laptop*, as she walks by with her book and Back Jack.

The pullout students return to the room at 10:35AM, they grab a book and a Back Jack and look for an open spot. A few of them sit down near me. Other students who were reading in different corners of the room get to their feet and put their books and Back Jacks away, leaving the room for their pull out time.

Two minutes later the landline telephone next to the door begins to ring.

Don't answer it, Blanca says and then continues with her group at the table in the opposite corner of the room.

Go ahead and answer it, she says after several more rings, *and tell them to call back because I am in group*.

One of the students close to the phone stands up and picks up the receiver.

Why are you here? says a student looking up at me from his Back Jack just a few feet away.

To learn from your teacher and classroom, I say turning my attention away from the phone and looking down at him. He is wearing jeans and a white polo whose sleeves hang down beyond his elbows.

He scrunches up his nose, crinkles his eyebrows, and looks at me for a few seconds before joining the other boys around him in laughter and whispers.

What are you going to burn for Ms Villa? he says a few minutes later.

Not burn, learn.

Oh, learn, I thought you said burn.

What book are you reading? Where's your book?

I barely got here, he says holding up a copy of John Reynolds Gardiner's novel Stone Fox.

I notice that the others sitting around him have a copy of the same book.

Okay, Laura, Diego, Mario, and Dominic, bring your brain and your butt.

Four students get up from their places and take their places around Ms Villa's table, her first group leaving the table and snapping up the four now-abandon Back Jacks.

At the table while students take turns reading Blanca scans the classroom, the eye contact she makes seeming to quiet groups more interested in talking than reading.

At 11:02AM, the second group returns from pull out with Ms Paloma, the special education teacher, enters the room and stands over a girl reading, reclining on a faded red Back Jack.

What happened to you?

Last time I pulled you out you were right on it.

Ms Paloma reaches down and taps the girl's all white tennis shoe. She looks up from her book.

Go to sleep earlier.

Okay, it's time to leave.

Those at the table with Blanca push their converted stools under it, those with Back Jacks pile them in the plastic tub, those few who opted to read at their assigned desk grab their pencils, notebooks and things and get in line.

In between Blanca's second and third periods, I walk down to the library to reshelf books. Each day I observe at the school, I try and spend my at least thirty minutes helping out in some way. Maggie, the librarian, employs a three-step system for getting a book that has been checked in back on the shelf. First she sorts books into fiction and non-fiction groups with the fiction section getting sorted again into easy readers and 'regular', next these books are loaded into tubs based on where in the stacks they should go, finally the books go from the tubs to the shelves in alphabetical order for fiction and topical order for non-fiction.

You need to see my PowerPoint presentation on fairy tales, Maggie says.

I agree to check it out when she shows it to her next group of first graders. In the mean time, I reshelf books and we talk about the school, about her children, the Spanish class she is taking, and what new children's books she likes.

The PowerPoint, shown in lieu of reading a book in the carpeted riser story time area, is made up mostly of slides of bullet point organized text about the history and characteristics of fairy tales.

I can only stay for the first part of Blanca's third and final block group, also referred to by her as the *low group.* They begin by doing the same types of activities only with slightly different content. Instead of a twenty question spelling test of words ending in 'ir' they have a ten question test of words following the consonant vowel consonant plus 'e' pattern.

Larry, why don't you write the word on the board, she says once the spelling test was over.

No, let's use the computer, she says changing her mind.

A chorus of *awww*'s and *no*'s rise up from Larry's classmates as he walks from the whiteboard to the computer.

Race against time

After eating breakfast in the library I walked up the hall and up the stairs to observe Blanca's second block group. I had stopped in twice during this group's language arts section, each time the grammar of the ninety minute session was similar, vocabulary focus followed by a read-aloud, and finally alternating book reading time and small group work. Each time Blanca asked me to create PowerPoint presentations, the first time asking that I create image-based representations of the week's vocabulary words and the second time doing the same for the words she would highlight in the book *Hawk, I am Your Brother* by Byrd Baylor. There are about four weeks until the first TAKS test of the year for 5th graders.

The plan for the ninety minutes of class time they would have together today was written on the white board when I came in, and visible from my regular seat by the computers:

Word Study

- *Prefixes*

Read Aloud

Explorers

Finish Reading your Book [from last week]

Projected via the overhead onto the screen in the semi-darkened classroom was an empty three-column table; each student had a copy of the table on light blue paper.

Forty percent of English words are made up of six prefixes and I want you to know what they are, she says.

They spend the next eight minutes coming up with false prefixes, and going over the meaning of *pre-*, *in-* and *un-* when joined with lexical stems or roots.

Blanca tells them to be on the lookout for prefixes in their books as well as in the book she would read to them after they looked at a double sided worksheet titled *Review: Critical Reading Race Against Time.*

Remember what they have you do on that silly test they give you? she says, looking around the room.

[silence]

They make you compare and contrast two different stories or characters.

[silence]

What's a matter with you today? I know I need to turn up the AC, she says going over to the thermostat and adjusting it, the compressor and the blower cycling on.

This week is about practicing context clues but mostly comparing and contrasting, she says holding up Cynthia Rylant's book *An Angel for Solomon Singer.*

What can you tell me about the word Angel? she says before starting to call on students with their hands up.

They might be from heaven.

They might have died.

There might be a person named Angel.

It might be someone with wings.

Tell me about hotels, she says, *what do you know about hotels?*

A place you can sleep in.

It's somewhere you can stay the night.

When do you stay in a hotel?

When you're going to Mexico.

What about the word Picture Window?

It's a window with a picture in it?

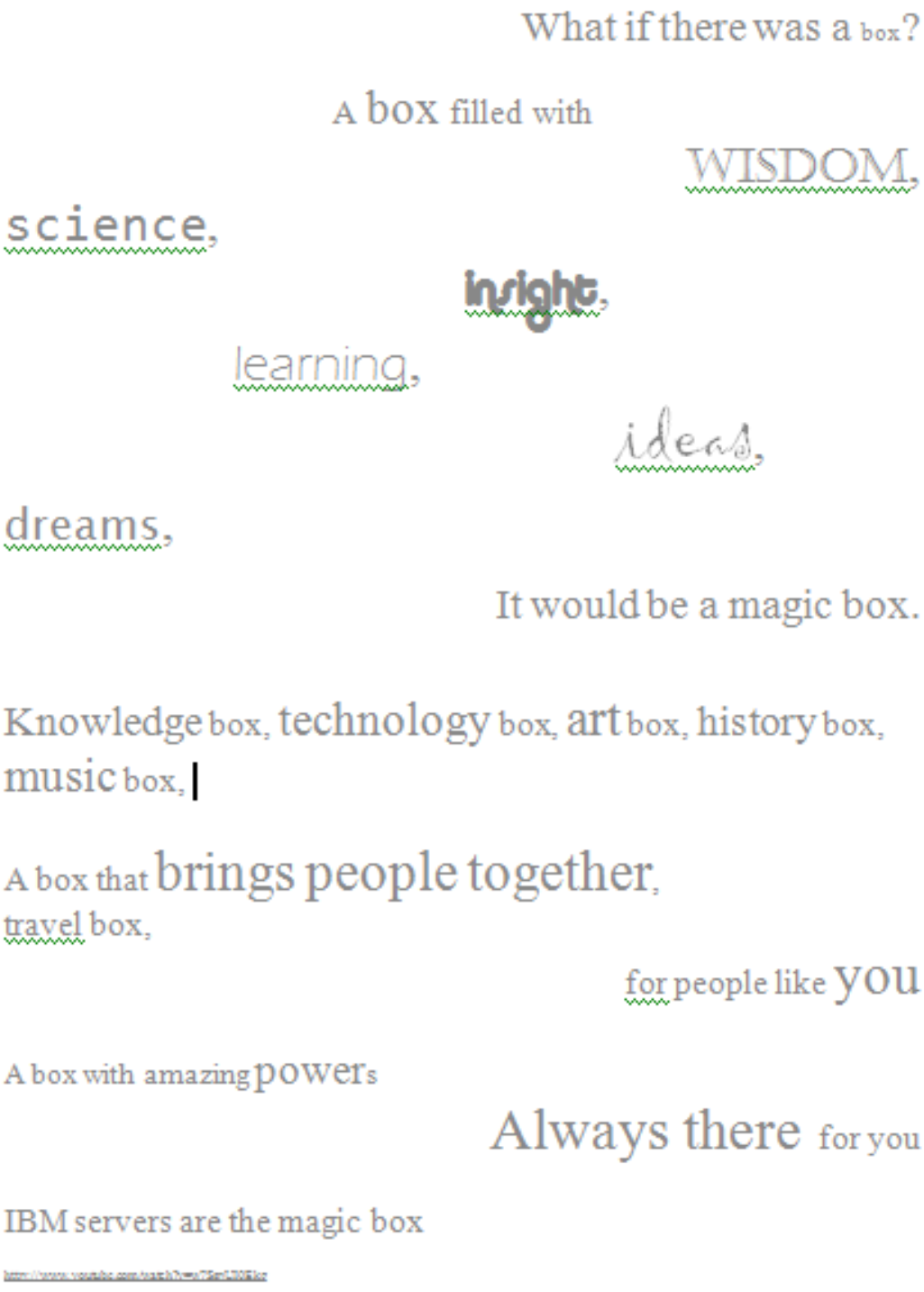

Figure 22: Societal discourses about technology.

It's a picture of a window?

What about the word wander?

[silence]

What kind of mood does the media set? she says holding the book open with one hand showing a scene painted in water colors. She grabs another book, opening it to a page painted with acrylics.

How is the mood different in these? she says holding up one in each hand.

With her help, they end up saying that the translucent water colors evoke a certain sadness while the opaque acrylic paints appear to bring up happier thoughts and feelings.

She beings reading, stopping here and there to externalize the inner dialogue she is having with the book or hopes the students have, asking questions as well.

Though there are pictures on every page, An Angel for Solomon Singer—also contains a great deal of text per page. During Blanca's reading I hear a handful of students whispering back and forth. I can't hear what they are saying.

After reading another page she asks them to think about the images on the opposite page as being part of the context, *what do they tell you?* she says pausing.

The whispering continues despite Blanca's silence.

CHRIS MOVE, she says.

I'M TIRED OF DEALING WITH YOU; I AM TRYING TO TEACH YOU.

MOVE TO THE BACK OF THE ROOM OR GO SEE MS TAMBORIL AND TELL HER THAT YOU DON'T WANT TO LEARN FOR THE NEXT FOUR WEEKS.

Chris pushes his chair out, snatching his black winter coat with yellow accents, and walks out the door leaving the room quiet save for the hum of the AC unit.

I'm going to call down to Ms Tamboril to make sure that is where you go.

She turns back to the class and the book asking a flurry of questions:

What does he want?

How does he feel?

What is his motivation?

If you were in New York City what would you see?

What would you smell?

An array of students participate, more than before.

What does this image of Solomon Singer tell you?

He's ugly.

He's lonely.

A woman wearing a red collared shirt under a black sweater with gray slacks and red strapless shoes comes in the room and sits in the chair next to the door.

Do crickets have conversations?

No they chirp.

So what is an Angel?

The telephone rings, the woman by the door reaches over, picks up the receiver and answers, writing a note after a brief conversation.

Blanca stops reading and tells the students to get started on their books.

How much longer will you be with me? she says walking over to me as students pull Back Jacks out of the blue tub and find a spot to read.

The rest of the year I say, minus a few weeks for comprehensive examinations and a European vacation in May. She asks me to help her get her four classroom computers up and running explaining what's wrong with each of them. The first step, if I can help her, is getting the district ID tag numbers for each machine. I agree, offering to fill out and submit the heat tickets on her behalf if she wants. She shows me how to fill them out and I get started.

As the students are reading and I am checking the sides and back of one computer for its district ID number, Ms Blanchet, the fifth grade science teacher comes to the door with a student.

He doesn't want to learn science, can he stay with you?

Can you send him to Ms Tamboril?

She can't, she says, shaking her head, *she's already gotten her share*.

Okay leave him, Blanca says, escorting him over to the quiet corner. She sets a timer for fifteen minutes and leaves him there.

Before sitting down at the small group table, she asks the woman in the gray sweater who called. It was the principal wanting to know what the issue was, she says.

A few minutes after Blanca placed a phone call, Chris reenters the classroom, his coat zipped all the way up to his chin, the yellow zipper standing out against the black fabric. He takes his seat and starts filling out his blue prefix table with the help of a classroom dictionary.

The timer goes off and Blanca sends Ms Blanchet's student back. The woman in the gray sweater comes over near where I am filling out support information to help a student with his prefix table.

How about un- words, she says.

He pauses, staring toward the doorway and then writes something in his prefix table.

Yep, uncorrect is one, she says nodding.

What happens at 2:45? she says.

Dismissal?

Yep.

I'm in Love with a Book!

On a Friday in early May for the past twenty one years, Zapata Elementary teachers, librarians, students, and community members hold a day's worth of events celebrating reading. They call it *Reading Rally Day*.

I entered Zapata Elementary at 8:12 AM on a Friday in early May to find a handful of people clustered around the open doors of the auditorium. Some hold babies, others the hands of two and three year old children looking in. The beat of an instrumental version of Soulja Boy's song *Soulja Boy Tell'em Crank That* bounces out from the auditorium. I look over the top of this group to see Zapata's students, some sitting, some standing in front of their assigned seats. The stadium-style seating descends at a steady grade toward stage. With parents and guests in the back, each class beginning with the sixth grade seated about two-thirds of the way from the back is assigned to a long middle row or two shorter side rows at the beginning of the year. Their sections are labeled with their grade level and teacher's name taped to the aisle-facing side of each row. A wave of feedback builds and pulses through the auditorium's two 3'x3' speakers suspended on platforms a few feet below the 40-foot ceiling. I look down to the area in front of the stage to see Ms G holding a microphone up to the speaker of a boom box sitting on a table next to the stage. Up on the stage singing and dancing to a reading rally version of the Soulja Boy song are most of the 6th grade students, one parent, a few teachers, and the librarian, all are clad in light blue paper skirts over their jeans. This is the opening, and only plenary Reading Rally Day session until the afternoon parade and rally at the outdoor amphitheatre.

As the kickoff event finished, I walked down the sloping hall way toward the library hoping to find a schedule of events. Maggie, the librarian, first told me about the reading rally weeks in advance, calling it *the best* and *only one in* [the district]. I committed to attend and offered to help. Along with several other non-classrooms, the library was used to stage read-aloud performances, and as I made my way there, hoping to run into Maggie, she came out of the back door of the auditorium, still in her light blue paper skirt.

Anything I can do?

She asks me to help the author who would be reading/performing her book in the library get her props and PowerPoint presentation setup. I enter the room to find a woman in her late forties dressed in a red velvet dress with elaborate gold stitching, a white shirt underneath and a white and gold hat with a trailing white silk train. There is an old looking drum and other artifacts on a table to my left along with a large vertical, free-standing poster of herself dressed in the same period costume, just as it is on the cover of her self-published book: *Maid Martha Tells It All The Ghost of Hampton Court* by Martha Hannah.

I move a table out of her way, as she readies her props and unpacks several additional copies of her book.

After she tells me there's nothing else she needs, I walk up the hall and back into the original part of the school. Climbing the stairs and walking right down the hall, I find no one in Ms Saucedo's room or Blanca's. The upper grades travel to different areas of the school to hear stories and participate in activities voted on by the class. I walk past the

computer lab, past the single flight of stairs leading to the gymnasium, and to the end of the hallway to Ms Ortiz's room. I step in the classroom to find most of them wearing blue jeans and white tee-shirts. Red, black, and green bandanas hang around their necks. Two boys wear black polo shirts instead of white. Virginia is wearing blue jeans, a white top and a red bandana. Those wearing white shirts are getting fitted for hats made out of brown butcher paper cut into large circles rolled up around the edges, with a loop of masking tape serving as a hatband. One by one she calls them over to her, pushing their hats on their heads so they won't come off, eventually quelling the protests about how they fit by pushing one onto her own head. One student is not wearing jeans, she is wearing a yellow dress –she is Esperanza Ortega, namesake of a book they read this year titled *Esperanza Rising*. This is the theme they picked for their class in the parade.

Once they are all wearing their homemade paper hats, Virginia addresses the class.

Welcome to reading rally day, if you cannot control your emotions you will not participate in reading rally. Don't ruin the rest of the month together. Be nice to the readers, they are taking their time. You all look gorgeous.

Ms Ortiz some kids were laughing at me!

Which of us looks the best?

You all look great.

Before heading out to the events, Virginia announces the top three readers in the class, they line up in front of the white board, and we clap. She announces the top reader and we clap again for Esperanza, the girl in the yellow dress.

I return to the library to find Maid Martha still setting up. Maggie is dressed in a blue hat and brown khakis shorts. She has just been presented with a bouquet of purple tulips which partially hide her employee ID hanging round her neck on a lanyard.

I'm a camper she says, *I'm going with a campground theme this year.*

She also points out her husband who is *being a doctor.*

We talk as Maid Martha connects her powered on laptop to the library's portable LCD player. While testing the two, the laptop spontaneously shuts down.

Now who is the techie? she says turning toward Maggie and I, witnesses to her issues.

I can help with that, among other things, I say.

While I work to check her connection and battery power, she gets out her cell phone and calls her husband.

My computer, the Dell, has shut down, now why would it do that?

We get everything working and cued up for her as the first group, a class of fourth graders, who soon come in and take their seats on the floor facing the portable projection screen.

Well I am Martha Hannah, an author as you know. So tell me, what have you been told about me?

The students shake their heads and look at her and at each other.

What? she says, *they just said show up?*

[silence]

She goes over to the laptop to initiate her PowerPoint slide presentation which hangs up. She starts narrating the trouble she's been having with the laptop to her audience, slipping between a Tennessee drawl and what might pass as 16th century English.

Can I help? I ask.

My husband, business partner, creative partner usually does this. But he's at home –couldn't afford to bring him. He's also the illustrator.

The presentation finally loads, filling the screen with an image of the book's cover. She steps away from the laptop and begins.

I'm a medieval comedian and stand up historian.

It takes a village to raise an idiot, she says in her character's accent.

A few adults in the room chuckle, she starts talking about her book *The True Story of the Ghost of Hampton Court*, which is both projected up on the screen and displayed on the 2'x5' free standing poster to the side of the screen. Both the cover and the poster feature Martha prominently, wearing the same dress, jewelry, and hat that she is wearing today. She tells the audience to look for the next book in her Maid Martha Tells All, juvenile historical fiction series, *Bloody Bloody Mary*. Two boys in the back row lying on the floor next to each other in the semi-darkened room start whispering.

I'm watching you with teacher eyes, she drawls, staring at them. They stop and sit up, and she reverts back to her character's accent.

This king was so mean, he had many wives, killed 1000s of thieves, and threw people in prison.

A student raises his hand to ask a question about the history of Hampton Court Palace.

That's a good question but you could go on the internet and find that out probably, she says.

From my position in the back of the presentation area, most of the students sitting on the floor look from her as she reads/performs the narration to the illustrations of book's pages displayed on the screen as she cycles through the demise of each of Henry VIII wives, beating on her drum at certain points.

At the end of the story, she thanks the audience and bows to applause. Once the clapping subsides, she turns to the next slide which shows more facts and gory details about 16th century England which she reads aloud and about which she makes comments. Martha talks about how she published the book herself, how it was laid out by a company in Louisville, Kentucky and printed in China, and about how she had a youth about their age consult on the book to make sure it was scary but not too scary. One boy, half kneeling, half sitting on his feet, brushes his hands back and forth on the floor, creating and then smoothing out ridges in the carpet fibers.

Okay now it's time to go but you can reach me at my website Martha Hannah dot com.

The students start getting up, talking quietly.

Now give me a hand because I like applause.

A few fourth graders stand around her laptop, using the arrow keys to advance and play back her PowerPoint while others get in line. Several other students grab copies of her book lying on the table.

Now those are not free, but I am offering a 20% discount for you, $14.

Those with the books put them back down and start walking away shaking their heads.

It's a lot of money, Martha says.

I've got seventeen dollars, one of them says, getting into his class's line.

As the classes leave, I slip out too, again heading up the hall and up the stairs to the back of the second annex hallway to Ms Ortiz's room to find the special education teacher's friend who is scheduled to read *The Perfect Pumpkin Pie* by Denys Cazet, a book about a pumpkin-pie eating ghost. The reading is to be preceded by a talk about the health issues migrant farm workers face.

Virginia's students are all on the carpet square on the floor in the back of the classroom listening. None of them raise their hands when she asks if they know any farm workers. Ms Ortiz raises her hand and I do too. I spent three summers in southern Minnesota's corn fields pulling out the pollen-producing part of the corn plant in the rows designated as female eight to ten hours a day, six days a week. I was a farm worker of the unexploited kind, getting minimum wage, hourly water breaks, a thirty minute lunch break, and bonuses for being thorough. Virginia and I are not asked and I don't bring up my experience. Besides being sprayed with chemicals from a crop dusting plane once, I'm quite sure my experiences, voluntarily undertaken as a means of augmenting my

paper route income, are not the types of experiences she is talking about. We didn't travel across the country detasseling corn; a bus picked us up five blocks from my house every morning at 6:30am. We weren't paid by the row or withheld pay if someone detasseled the wrong row. We didn't attempt to unionize or threaten to strike or cross picket lines as the depression-era farm workers in *Esperanza Rising* had. We had tassel fights, took lunch breaks, and were dropped off in time to eat dinner at home.

She reads *The Perfect Pumpkin Pie*, 2006 Northern California Book Award Winner, while we listen, sitting close together in between Ms Ortiz's two small shelves of classroom library books. During the reading Virginia laughs at every play on words, each ironic or sarcastic statement—smiling and sharing a look with her students.

I leave the classroom midway through the book, hoping to slip into the library and sit in the overstuffed chair with ottoman in the back corner and or behind the computers to write down some of the things I've experienced so far; however, Martha is in the middle of another performance and I don't want to interrupt. I sit down at a table in the hallway where I will be able to see when the show is over based on the exodus of students filing out.

I'm about to start eating my breakfast when a man comes up to me and asks if I am with Martha Hannah.

No, I'm a researcher with Flagship University.

When I saw you I knew you were doing something important.

He tells me that he has been filming Reading Rally at Zapata for 12 years –he hopes to make a documentary someday. We speak briefly, and he leaves me to eat my

breakfast encouraging me to use him if I can to further my work and in exchange he requests that I send him an email with Zapata in the subject line.

He gives me his card and walks up the hallway. Later, I would wonder about this exchange. As the day goes on, I notice his presence filming and giving out his card.

I wander the school, slipping into the library to check my email. I feel like I'm supposed to be diving into what's going on, really getting into it as a former teacher, as an ethnographic researcher, and as a member of the Zapata community. But instead I'm looking for a corner of the library to write notes and then pick a book off the shelves and read for a while. I wonder to myself if having no Reading Rally Day role has made me harder on Maid Martha. My actions feel flat and arid. I ask what I can do, how I can help, but the timing is wrong. Helping mostly means being there when an issue arises, being there during the process, jumping in or standing by depending on the teacher. I witness technology in use but I have not made this my garden, this is no *Pull of the Earth* experience.

Blanca invites me to the teacher's lounge for food and to eat it with the teachers and reading rally performers. I eat a plateful and then go and sit in the back row of the empty auditorium to type up and expand my fieldnotes.

Around me, taped to the auditorium walls are several hand painted signs on different colors of butcher paper.

I <3 books

I'm in Love with a Book

Read

Honesty, Courage, Respect

Reading is cool for School

Reading can take you Anywhere

Readers are Leaders

Around these, fastened with wire and fishing line are several multicolored laser printed banners that read:

Believe, Achieve, and Succeed

Treat others the way you want to be treated: Respectfully, Responsibly

Character education: Respect/Respeto, Courage/Valor, Caring/Afecto, Honesty/Honestidad, Perseverance/Perseverancia

Think Straight A's: Attitude, Attendance, Achievement

About fifteen minutes after I take a seat, people late teens and early 20s start coming into the auditorium in groups of four and five, carrying trombones, trumpets, a tuba and the like. Dressed in pumpkin colored band uniforms, they gather around the front of and on the stage, assembling their wind instruments, warming up their lips, releasing spit valves. Eventually they begin playing at their own pace. Ms Tamboril, the principal, comes walking down the left aisle in a blue tee shirt and black cloth pants, black ears, a pair of black wings pinned to her back she goes down to the front shakes someone's hand and then makes her way back up the aisle. The Flagship University band rehearses the fight song with the Zapata Elementary 5th grade band, and Flor stops midway up the aisle, breaking into a brief soft shoe dance before exiting out the back of the auditorium.

I walk by Ms Saucedo's room, their theme comes from a book about pigs. Jasmine is wearing a pig nose and ears.

That's great, I say, *that'll keep the sun off you.*

I linger there until the awkwardness of me hanging out by the door not saying anything gets to be too much and I move on down the hall to see what Blanca's class is

up to. I enter, and sit on a stool near the computers. I get out my camera to find that my batteries are dead.

Mr. Olmanson, how would you like to be the class photographer?

As she has done before, she has a knack for knowing how to fold visitors, volunteers, and researchers into the mix of her classroom. I am thankful to have a potentially useful role, for being folded in.

She gives me a digital camera and asks me as we are walking out if I would also mind watching / supervising two students who wouldn't be participating in the parade portion of the rally due to behavior issues. I agree, and as Blanca and the rest of her class head outside to the front of the school to find their place in the parade, unfurl their banner, and get ready to march, my two charges and I walk back to the auditorium to see if the band is still practicing. Finding it empty we walk down the sloping hallway, past the now-empty library, past the first grade and kindergarten classrooms to the double doors leading to the playground, field, and hillside theatre behind the school.

Realizing that the parade would start on the other side of the school, we walked back up the hallway to the front of the school and went out the main doors in hopes of finding a spot from which to watch.

We walk past the parade staging area, the readers with the most points in each class climbing up into the backs of pickup trucks, and the top readers in each grade level sitting in the backs of convertibles. Each class has a paper banner with the name of their teacher, their theme, and grade level. Costumes are adjusted, swords fall apart and are repaired, banners are taped, and the Flagship University band stands comfortably despite the 90 degrees-in-the-shade Central Texas heat.

Let's find some shade, I say to the two boys with me, motioning for us to go South to the corner of the block.

We turn West at the corner entering the beginning of the parade route. Soon after our turn, we overtake a group of people carrying clipboards.

Would you mind being a judge? says a woman.

I've seen her before, she may be the campus HOST coordinator, or the Flagship University Intern coordinator, or the Cognitive Approach to Math coordinator, or the Reading Specialist, or an active parent volunteer. She holds two clipboards.

Sure.

With a clipboard in my left hand, Blanca's two students in front of me, and a digital camera in my right hand, we walk West along the sidewalk until we come to the raised, shaded, stoop of the local community center whose facilities are separated from the campus by a narrow alley. The stoop offers a little shade and the parade is upon us quickly. The University Band leads off followed by students grouped by grade level and by class with each class carrying a banner announcing their theme and literary inspiration. I alternate between taking pictures, and filling in the blank judging forms with teacher name, literary theme, and scores on a multidimensional Likert scale. My judging is haphazard and quick; classes walk by faster than I can fill in the identifying information, or contemplate if their costumes, creativity, or enthusiasm deserve a three, four, or a five. I give more thought and points to Blanca's, Ms Saucedo's, and Ms Ortiz's groups than the others. Some classes march behind their banner chanting reading-related slogans, their top readers riding in the back of a pickup truck, their grade level top reader in a convertible waving to the parents, staff, and community members who have turned out for the event.

As the last group of students goes by, I wedge the pen in the clipboard, turn off the camera, and lead my two charges through the community center's unlocked gymnasium and out into the school's back courtyard. We walk past the playground, and

around to the front of the outdoor stage. The University band is already assembled and is playing up on the stage. Many of the lower grade students are also finished walking along the parade route and sit watching the band from the embankment leading up to the street.

As each class finishes their loop around the extra long block their teacher directs them to a section of the hill for them to sit. I help pass out bottles of water from ice chests positioned along the bottom of the outdoor theatre's stage. My car is parked at the top of the hill and I grab a large Flagship University Continuing Education umbrella out of the trunk. Blanca's two students and I sit under the umbrella drinking our ice cold bottled water while we listen to Ms Tamboril, a pair of wings sticking out beyond her shoulders, call out the names of the school's top readers who all line up along the stage to receive recognition. We participate in reading chants led by Ms Ortiz, and stand with everyone during the joint Zapata Elementary, and Flagship Band's playing of the University fight song.

Flor thanks everyone for coming and urges each class to pick up the plastic water bottles, wooden popsicle sticks, and plastic ice pop tubes after themselves. I leave Blanca's two students with her and head indoors to cool off in the empty library. I sit down in the overstuffed chair, put my feet up on the ottoman and reread a chapter of *Harry Potter and the Goblet of Fire*, sipping water, waiting for the sweat to dry.

Ten minutes later, I head up to Blanca's classroom to find them collaboratively writing thank-you notes to the people who led the reading showcases that they went to during the day. Olimpio, her alternative certification state region teacher intern, types up and formats the ideas and phrases the students come up with on a computer hooked up to the LCD projector, his thin 6'8" frame forcing his knees up around the desk on each side like knobby white hills bookending a woody plain. Blanca walks around the room, guiding the discussion –asking the students one after the other to contribute details—and

come up with alternative greetings and closings in the few minutes they have before the day is over and the details fade from memory.

After the students put their writing away and place their chairs on of top their desks, they are dismissed and flow with the rest of the school out through the main entrance to begin their weekend. Blanca thanks both of us for our help today and in general, mentioning that she doesn't know what she will do when Olimpio and I are no longer there to help her. Olimpio leaves and Blanca says that she has another intern coming for the end of May.

I say goodbye and walk down the hall to peek into Ms Ortiz's classroom through the narrow window built in to her door. The room is dark, the chairs are on the tables. I walk down to the office to sign out. Today I have to hunt for my name among the pages of visitors who have signed in to perform, assist, and attend the rally. Exiting through the main doors I spot Ms Tamboril leaning against the ramp railing in the shade under the canopy, her wings off, but her black costume ears still sticking out of her head. She sees me and laughs.

You tracked me down, she says, her voice raspy.

It's been quite a day, I say.

By 10:30am I knew it would be a long one.

Good for everyone but long, she adds.

I have needed to schedule an interview with her for the last month or so. I ask about her research for her doctorate at Regional State University. She tells me about her committee's propensity to meet together, about the IRB concerns she has had to work to overcome in order to collect data on her own campus.

She agrees to be interviewed at 11am the following Wednesday saying that she thinks her voice will be back to normal by then.

I told them, no more cheers.

Queue the readers I joke.

She laughs, and I head around the side of the school and up the embankment to my Corolla. I open all the doors to let the heated air trapped inside escape. I'm starting to feel sick. By the time I make it home, I already have an email from Flor asking to switch our meeting to 9:30am. Days later it is rescheduled again, pushed back into the first week of summer vacation.

Teaching is not the final thing for me to do

The day after returning from Europe I head over to Zapata in the afternoon to see if Ms Villa, Ms Saucedo, and Ms Ortiz had sent the consent forms home with their students, and if they had, when, over these last few days of school, I might interview them.

Walking toward the stairs after signing in and making a name badge in the office, I hear Virginia call my name.

I can recognize you by the back of your head, she says, as she and her line of students, a few of whom hold soccer balls and other playground equipment, catch up with me.

I walk up the stairs and down the hall with her, we talk about my trip and the last three weeks she's had teaching. She hasn't sent the consent forms home yet but she will today.

You can write, you can weave, or you can draw, she says, her students fanning out in different directions as they enter the room.

Before I leave, she asks for help adjusting the settings on the iMac. I don't know how to do what she asks me, but a few Google searches later and I figured it out. She thanks me and I walk down the hall to speak with Ms Saucedo.

She too asks about my trip. When I ask about the consent forms she says that several students turned them in, though she is not sure where she put them.

I guess you could pull them out at any point, they can miss some of the movie, she says assuring me that she'll be able to locate the forms by the next day. She adds that Tuesday morning before their IMAX field trip, or anytime on Wednesday would work.

I thank Jasmine and walk one classroom over to find Blanca alone in her room, her students split up—some in art, some in PE, others in music. Wednesday anytime works for interviews, she says. I sit down on one of the desks, and she tells me of her unrealized plans to incorporate more technology into her teaching, some of which was in her closet for much of the year.

Ms Tamboril said I have [an Elmo] and I said I'll take it, she says, *it would have been easy in terms of showing student work.*

She said she would have wanted a DVD player, and for her wall mounted TV to get hooked up to the free cable the school received, which actually did get installed over Spring Break but, *during the whole TAKS frenzy it never got done*.

When I asked her about summer plans, she said she was going to take the Group One insurance test and sell policies with a friend while she goes to graduate school at Regional State University.

Teaching, she says, *is not the final thing for me to do.*

Conchas and feeder patterns

At around 11AM on the day after the last day of school, I drove over to Zapata. I was interested in seeing if Jasmine, Virginia, or Blanca wanted any help cleaning up, organizing, or breaking down their classrooms. I was also hoping to get access to any technology-related emails they had sent or received over the course of the year.

As I entered the office, I heard two women both in over-sized white tee shirts asking Ms G the attendance clerk how to get to Ms Villa's room.

I'm going up there, I said. Without looking in my direction, they left the office while I filled out my name badge, peeling off the backing and sticking it where the pocket would have been on a dressier shirt than the gray and white polo I was wearing.

I passed them on the stairs, they were climbing up one step at a time with breaks in between. By the topmost flight of stairs, the sound of a baby crying drowned out the labored breathing coming from the women behind me. Through the open door into the room across from Ms Saucedo's unpeopled classroom I could see several boxes and a fourteen-month-old boy crying and looking around, his feet just touching the floor in his walker.

Walking one door down, I found Blanca looking through a box standing next to the back closet. Her wall mounted TV was on, a small, semi-transparent TBS station identification stamp visible in the bottom right corner of the screen.

Blanca, you finally got your cable connected, I said smiling.

Yeah, I was just watching the movie Serendipity and thought it was just perfect.

What can I do?

Really? she says looking around the room, *well I'm leaving the number line, but you could take down the alphabet and the math facts cards.*

I climb up on the counter to start taking down the alphabet placards wrapping around the upper edge of the walls in alphabetical order and she turns off the TV and turns on the radio. I was standing on a table, taking down the letter *D* when the two visitors from the stairs come into the room.

You didn't tell us you were leaving, says one of the women.

I forgot, Blanca says, *Ms Tamboril didn't give me 6th grade so I'm going somewhere that's just three blocks from my house. I'll be biking there.*

The two laugh and ask if they can use the computer to check something on the internet.

Let me put you in the computer lab, she says grabbing her key-laden lanyard off its nail by the door, *only because it's cooler in there*. They leave, and I continue my circumnavigation of the room's perimeter. Each alphabet card displays a letter along with

its corresponding English phonemic range and is taped to the wall with transparent packing tape.

How did the interviews go, says Blanca when she comes back in a few minutes later.

They went pretty well, I say, standing on a blue plastic chair and reaching up for the letter *'L', I got through all but one, in the end there were only three minutes left in the day and so I didn't get to interview Cynthia, but that's okay.*

I could call her, she says already flipping her cell phone open, *if I know her she's just sitting around at home bored anyway.*

That's okay, my recorder is full anyway and I think I have enough. She'll be around right? If we need her, we could interview her later right?

She puts her phone away while I wonder why I turned down the chance to collect more data.

What do you think about the closing of Jamison? I say, remembering the sign in the front entry of the school identifying Zapata as one of the elementary schools that fed into Jamison High School before officials decided to close it starting next year.

Some people feel that the problem isn't at Jamison, it's the feeder pattern. They say the scores have gone down each of the last six years that Ms Tamboril has been here, she says still looking through boxes, *Ms Tamboril refuses to retain any students.*

Finished with the letter placards, I turn my attention to the four class photos stapled to the eighteen inch corkboard running the length of the white board.

Do you have a staple puller, I say, realizing the staples are wedged too firmly for me to pick out with my fingernails. I also don't want to risk tearing any of the images.

Better yet I think I have a destapler, she says handing me a cup of pens and scissors to look through.

Look in the drawer; she says, when a search of the cup turns up nothing.

I find a potato peeler in the drawer and decide to give it a try at staple removal.

I have no idea why I have that, she says gesturing toward the potato peeler now liberating the class of 2005-2006 from the cork.

It must be hard, I say as I inch the tip of the peeler between the staple and Blanca's Zapata Elementary class of 1998-1999, *on one hand if you retain them, later on they drop out because they don't fit in anymore, but if you pass them they have trouble catching up to that moving target.*

She pauses and explains that in her experience most of the students she has retained *have responded really well except for one who didn't.*

We work to the drone of the radio, the sound of shifting things and boxes, the exhale of staples destined for a landfill after nine months of service.

What can I do next? I say after taking the cards displaying mathematical principles off the back wall and sliding them into a plastic bag Blanca handed me.

You could take the bulletin board border down out in the hall, they're bookmarks.

Potato peeler in hand, I head out into the hall. Next to the floor-to-ceiling Mercator projection of the world is an empty 5'x3' bulletin board. About five minutes into the project of removing the border made up of bookmarks, Ms Saucedo comes out into the hall and asks if I can take a look at her iMac. She also says she needs the combination to the lock anchoring the computer and iPod center to one of her computer tables. I follow her into her room.

Hey, you're almost done, I say, noting that all her desks are pushed together in the middle of the room, and most of the accumulated paper has been cleared off her desk. She wants to know if I have the combination to unlock the iMac and iPod center from the table. I do not.

Is this the whole computer? she says, pointing to the two inch thick monitor.

Yep, I say, asking her if she would agree to forward me any technology-related emails she's accumulated while at Zapata this year.

What do you mean by technology related?

Just anything related to computers, or the librarian's emails or Alejandro's iPod messages. However many you have time to forward, I mean you don't need to spend an hour doing it, unless you want to.

Sure, she says, *do I have your e-mail address?*

She checks to see if she has saved any of the email messages I have sent her, *I don't think so.*

Well let's put me in your contacts.

I don't think I know how to do that.

I could do that.

That'd be great, let me take this stuff to the office.

I enter my e-mail, secondary e-mail, full name, address, and Flagship University affiliation. I test it out and it auto-completes provided the J in Justin is capitalized.

It's in there, I say when she comes back; *just make sure to capitalize the J in Justin.*

Okay.

I'd be happy to do it myself if you feel comfortable with me in your e-mail account.

That's fine, she says, *just let me send an email to Alejandro to get the combination.*

Once she is done, I settle in to her e-mail account and start looking through it for any technology-related email.

While I forward search Ms Saucedo's account in reverse chronological order, I ask her about her summer plans, already guessing from the number of summer school subject headings in her most recent emails that she is teaching summer school. She tells

me that she gets the weekend off and then starts preparing on Monday for summer school.

And then, ten days later I get married. We're going to the Keys for our honeymoon. We wanted to go to the Caribbean, but I don't want to spend any more money on this trip. I'm working summer school to pay for the [wedding] musicians.

Twenty minutes later, I had nearly made it through her entire inbox. We continued to talk sporadically, mostly about her impending nuptials.

It's been hard planning this wedding. I mean no one in the valley has a website. I had to use a freaking phone book. I told [my fiancé] that if we ever moved back to the valley, and I hate the valley, but if we ever did that he could just open up a business that set up simple web pages for businesses in the valley.

Jasmine wasn't in the room when I finished with her email, so I logged out of her account and continued removing bookmarks from Blanca's bulletin board.

I could hear voices coming from Blanca's room and popped my head in to say hi to her former Region Certification Program Intern who was in there along with a middle school aged boy I didn't recognize. A few minutes later, I went back to work. The boy came out into the hall and stared at the map, eventually tracing his finger from one point to another. When I finished removing each book mark from the board I stacked them on a table and went back out into the hallway to ask him what he was doing.

He told me he was tracing the route and looking at the distance between Washington DC and London, England. Later in the summer he would be making the trip,

he explained, placing his left index finger on the US capitol and his right over London, his arms stretched taut.

You're leaving from DC? I say, *last August I flew from Washington DC to Beijing China.*

We find Beijing and he tries to keep his left hand over DC while stretching his right hand past Africa, India, and Western China. No luck.

Fifteen hours in an airplane, I say as I head down to Ms Ortiz's room to see if she is in.

Her room is dark and her door, locked, so I walk back down the hall, down stairs and down the sloping annex hall to the library. When I come in I notice an open pastry box one third full of conchas, and other Mexican baked goods sitting on a table near the front of the library. Maggie is in the stacks, the top of her head easily visible despite the fact that she is using one of the ubiquitous small blue plastic chairs while she reshelves books.

Hi, she says standing up, *what's up?*

I want another crack at the back room.

Over the past week, I've been coming in and reshelving the small mountain of audiovisual materials teachers checked out for end-of-the-year viewing and then returned.

They're lined up right there, she says pointing to the back ledge of the story-time seating risers near the multimedia library door.

Each trip, I take four or five video cassettes and the occasional DVD into the AV/bilingual reading specialist's room to organize and place on the shelf. We carry on a conversation that intensifies when we have a line of sight with each other and turns to raised voices or long pauses when we are in different rooms.

In this way, she tells me about her son who is looking for a job in San Francisco and about visiting her daughter in Florida. She asks me how my research at Zapata went this year, about what I thought about the level of technology usage on campus.

Schools spend a lot of money on technology and sometimes it is not used like it could be. I mean I've seen the four or five classroom computers get used some but mostly they are off. I've seen the computer lab stand empty most of the time.

I can tell you who the technology users are at this school, she says.

And that's exactly what I hope to talk with you about in our second interview.

We continue working for a little while when she says, *we could do that interview now if you want*.

Thanks, I say grabbing five more videos, *but I was thinking about coming in during your summer hours and catching you in your lag time.*

Leaving me to wonder why, for the second time I had turned down the chance to collect more data.

As we work other teachers and staff come in the library to grab a pastry and comment on Maggie's progress.

It's a lot easier to find lost books once everything is shelved, she says to one teacher.

Whew, I'm developing a stoop, I say grabbing another handful of videos.

It's a sweaty job, you wouldn't think it is but it is.

What do you think about the news about Jamison closing, she says, her voice carrying into the AV room.

I walk back into the library, the three videos I was attempting to shelve left in a stack in the back room, *it's sad that students can't go to their neighborhood school and that local people don't get the final say in the future of their school,* I say, *I guess the state feels like the gains they made weren't enough, that they need to change the culture.*

We have stopped reshelving and are standing where we can see each other.

I think they need more technology. I'm a big proponent of finding out what is working elsewhere, best practices, she says.

Ms Tamboril pops in to get a concha, asking Maggie how it's going.

Hard work, she says. I stick my head out of the AV room and wave just before Flor turns to leave. She waves back and says hello.

I finish the row of videos, grab a croissant and head back up to see if Ms Ortiz is in her room. She is not; I finish the pastry and re-enter Blanca's room. She now has a former student helping her as well as two retirees. Plenty of help I think to myself.

I'm going to take off, I say, *but we'll see each other over the summer.*

Ms Saucedo, pen in hand, is bent over what look like computer generated forms when I pass by the open door to her classroom.

Have a good summer.

Thank—you too, she says looking up.

I walk down to the front office and sign myself out for the day.

Oh you don't have to sign out, says Ms G.

Okay, I just wanted to follow the rules, I say before exiting the building and driving back to the Flagship University Campus.

LINE 4 ATTENBOROUGH

Figure 23: Map of sections in the Attenborough line.

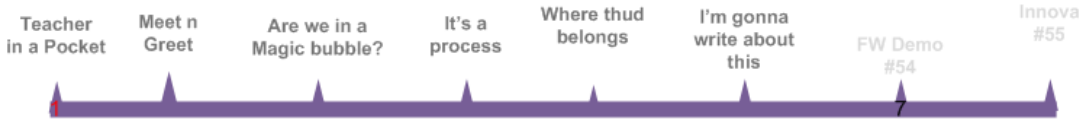

Figure 24: Alternative map of sections in the Attenborough line.

Teacher in a Pocket

All guests arriving at the school must write their name, time of arrival, and nature of their visit in the visitor's log binder located in the school office. They must also write

their name on a paper adhesive name badge and affix it to their person in a visible place. I say hello to the office staff and write my name, 8:15AM, and iPod Research Project on the next available line. As I fill out a name badge and stick it to my green polo shirt, I ask Sandra, who sits closest to the counter separating the three work stations from the public space in the office, if she knows where the iPod training led by Alejandro Zaragoza will be held.

The library, she says.

Heading out of the office, left past the stairs, and left again down the sloping hallway and through the library doors on the right, I find Alejandro and Ellen in the front part of the library, near the overhead screen where the upper grades sit at miniature tables in miniature chairs after they've checked out their books and are waiting to head back to class. Alejandro and Ellen are connecting mice to keyboards, and the keyboards and sets of seven iPod Nanos to two white iMacs with 27 inch LED cinema monitors. There are newer editions of the iMac on the market, but these two are at least five years younger than the black Dell desktop machines with the CRT monitors that populate Blanca's, Jasmine's, and Virginia's classrooms as well as the computer lab.

I say hi to Alejandro and Ellen, and walk over to Maggie who is re-shelving books in the easy-reader section of the half-size stacks.

How did your test go?

In late February, I told her that my qualifying examination –parts A, B and C of my qualifying examination would keep me from observing very often in March and early April.

It didn't go especially well.

Well at least you are done.

Yeah, I say nodding, *done with part A, two parts left to go.*

…

Wandering back toward the front of the library, I see Virginia, sitting in front of one of the iMacs. She is wearing khaki pants and a blue Zapata Elementary short sleeved shirt, her hair pulled back in a high ponytail. To her right at the other table in the row, Ms Saucedo sits to the side of the second iMac writing out what appears to be a series of checks. She is wearing blue jeans and a light blue zip-up sweater.

How have you been? I say looking at Virginia. Clipped to her pants are her keys, district ID badge, a green dry erase marker, and a yellow highlighter.

Nothing like the first of the month, I say to Ms Saucedo going over to her short stack of pre-addressed envelopes.

Principal Tamboril comes in and comments on the new computers and iPods, we speak briefly about her doctoral program at Regional State University, and my recent comprehensive exam.

You seem to know everybody already, Alejandro says as Flor leaves. He introduces me to his colleague Ellen, a first year Instructional Technologist for the district who is wearing a pink shirt with black pants, her brown hair pulled back with barrettes. Sitting on one of the tables across from us, his left leg swinging freely, Alejandro picks up the bag of assorted Nestle bite-sized chocolates lying on the table. He pops it open before letting everyone know that we're getting started, his left leg swinging freely,

Alejandro is wearing a dark cyan shirt, khaki pants and brown loafers. A blue lanyard holding his district ID badge hangs from his neck as do a pair of white ear-buds, their cord disappearing into his shirt pocket.

He picks out one of the chocolates and sets the bag down, spilling its contents onto the table in our general direction. Virginia and Ms Saucedo are already seated near their new computer and iPod class set. I grab a chair and position it in the two feet of space between their tables, from here I can see them, their computer screens, and view the presentation as well. On my lap sits a blue, $40-on-eBay, AlphaSmart, note taking device.

Saying that he wants to *keep this informal*, Alejandro, flanked by the chocolates on one side and a twenty-ounce bottle of Dasani water on the other, begins by asking if either teacher has checked out a campus or district-purchased digital camera. Both shake their heads.

I mostly use my own camera –I'm just so used to it, says Virginia.

So what are we going to be downloading? Books? Ms Saucedo says.

Alejandro asks them what their ideas are for using the technology. Virginia says she plans on recording her struggling readers, further stating that she bought a set of iPod-enabled portable speakers on clearance for $16 dollars so everyone in class can listen.

Redirecting the conversation, Alejandro talks about the importance of obtaining parent signatures on district talent release forms for each child.

[This] gives us permission to use their work and image in news articles and video. We want you and your students to create with technology, we want to publish as much as possible to the iPods and externally to iTunes or other websites.

The black metal iPod containers that Alejandro purchased and modified look like a typical strong-box only with a hole in the side to allow a usb cable to pass from a usb docking hub to the iMacs in order to both charge and synchronize the iPods while they are locked inside the containers. The containers themselves were outfitted so they could be anchored to a table with steel cable.

Alejandro explains that the district's instructional technology department started experimenting with iPods in ESL and social studies classrooms at the HS level a year earlier, expanding the program to a few middle schools and one pre-kindergarten room – pre-k receiving audio-only iPod shuffles for use in classroom music centers.

Don't send [the iPods] home. At districts that they do, they bring the parents in and have them sign [an agreement to pay the replacement cost should the unit be damaged, lost, or stolen], he says.

His PowerPoint presentation includes the url address of his Wiki: ***es**.pbwiki.com.

And what exactly is a wiki? says Virginia.

Alejandro gives a brief explanation along with an overview of the two-part training plan—they'll have part one today.

Session 1 is the intro, how to use the computer and maybe we'll look into the iPods. Session 2 focuses on software like garage band.

He goes through a PowerPoint presentation that gives the Instructional Technology Department's rationale for the English Language Learner [ELL] iPod project which includes the importance of presenting content in multiple modalities, using a platform or instructional vehicle that meets the students at the sweet spot of their digital literacy, and has the potential to amplify successful practices.

Some of the slides cite research and books: *How People Learn*, *Access and Engagement, Literacy Technology and Diversity*; others suggest classroom management ideas since there are only seven iPods per group and 15-18 students in their classrooms. Alejandro concludes the presentation by encouraging them to support their students in going beyond consuming content and into the process and procedures required to develop and publish their own material by using the iPods for content consumption, freeing up their classroom computers for creative work.

Two of the things you're getting are these little mics, they're very high quality, you can record reading samples or keep a record, he says holding up one of the white add-on microphones before continuing, *what would engage a 5th grade girl and boy? Soccer but in English, but what would a girl like?*

Chismes [gossip] podcast in English, says Ms Saucedo.

Novellas [soap operas] or maybe E news, says Virginia.

Alejandro nods, pushing student-created content such as interviews, songs, speeches, pictures, and presentations as preferred uses for the devices.

Anything from United Streaming can go on the iPod, he says before describing the department's suggested three-part, sixty minute iPod project lesson cycle of twenty

minutes on the iPod, twenty minutes on the computer, and twenty minutes with the teacher leading the entire class.

The stuff is yours, it belongs to Zapata, Alejandro says, outlining the iPod Project User Agreement which requires participating teachers to come up with two different ways to test the effectiveness of the iPods with their ELL students.

[This is] $2500 worth of stuff that you're getting so keep that in mind. Probably closer to $2700. Find out [what] helps, doesn't help, [or] hurts, something we can put numbers to. It might not pass muster, he says pointing to me, *[but] you'd be surprised what passes muster.*

These guys have a CD and DVD burner on them if you ever want to send content home you can just burn CDs.

So are we good with that, ya'll understand what everything is?

After a pause wherein no concerns are raised Alejandro announced a five-minute break.

I ask Virginia how she is, she calls it crunch time with the TAKS coming up in late April.

I'm just trying to think of how to use this in a way that will motivate them, she says, *when [testing is] over then we'll be using them a whole lot.*

She also mentions that her students have been using TELPAS, the Texas English Language Proficiency Assessment System for English Language Learners which has a highlighting feature they enjoy.

The training reconvenes with Virginia and Ms Saucedo logging into their iMacs for a Mac OS introduction/refresher including the finder, a few utilities, browsers, and AppleWorks.

Virginia asks a question about webmail via lotus notes, and we spend several minutes talking about webmail, wireless signals, and passwords. For these two computers, the password is *tiff$2000.* Someone notices that the Microsoft Office program installed on these machines is not very recent.

Maybe with the booooond, says Ellen.

This was not the first time I had heard district employees mention it, the proposed $197 million dollar bond election would be presented to voters the following November with some of those funds earmarked for the purchase and installation of additional educational technology equipment ("_ISD Bond Information," 2009).

Alejandro showed them Garage Band, an audio editing and creation application, and Photo Booth. They played around with Photo Booth, taking pictures with the integrated camera at the top center of the monitor and applying different effects.

I grew up in the wrong time, says Alejandro showing them how the Safari browser automatically looks up words in an online dictionary when they are highlighted, how they can zoom in and out, how to use YackPack, a web-based audio recording tool, and how ClustrMaps, a geographical hit counter, works.

Do we need to show how to add music to the iPods, Alejandro says at the start of part two of the day's training.

No, they both say.

I don't understand how to download something that's not on iTunes, says Ms Saucedo.

Alejandro directs them to FreeKids Music .com, showing them how to download an audio or video file via a browser before saying, *let's take five to seven minutes to download as much stuff as we can today,* once both teachers seem to have the hang of it, he and Ellen step out of the library.

I don't know what my kids will think of these songs, says Ms Saucedo looking at her screen displaying a partial list of available titles.

I'm like where's Hannah Montana, says Virginia.

Are there songs in Spanish? I say.

I don't see any, says Virginia.

When Ellen and Alejandro reenter the library the focus turns to using iTunes.

Well let me show you a little about iTunes. Audiobooks are good but they are fairly expensive.

Can you listen to a section of it before you buy it? Maggie says from within the half stacks. Alejandro confirms that each audiobook for sale has a thirty second preview.

We have been meeting in the library all morning, but no one has asked the librarian about her ideas, nor have they inquired about school or district resources.

One of the ways I was able to learn how to read was GI Joe audio records. Let's go to iTunes U, this is more for you guys not so much for your students. It's pretty neat. There are course recordings here's one from Yale, says Alejandro as he clicks on iTunes U, getting a list of the participating colleges and universities.

I make a hissing noise and the others laugh.

I'm required, I say smiling.

You went to Yale? says Alejandro.

No I went to Harvard.

Well my brother went to Yale, says Virginia. I hiss again.

I don't see Harvard, says Alejandro scrolling through the list of Universities.

Nah, they're selfish, I say.

Let's look at podcasts, says Alejandro after a few minutes of poking around in iTunes U but no downloading or subscribing by the two teachers. He plugs ESL podcasts like Eigo, an English language learning program created for native Japanese speakers that focuses on phonemic approaches to language learning.

These sites might make for a good way to have the students investigate how people in different places learn a language, I say, noting that for every podcast created in the US there is one created in Japan, the UK, Australia, Mexico, Poland, Spain, and other countries/cultures. This comment garners a shallow *yeah* as they continue searching.

Take 15-20 minutes to look around, says Alejandro, *stick to the Podcast site.*

The room fills with voices explaining the difference between *fun* and *funny* on the Tu Ingles podcast, a woman asking where she can find the rice (ESL Aloud), the number six (Sesame Street), exploring with Dora (Nick Jr.), the meaning of the word *gentry* (Very Vocabulary), and a reading of The Witch Who got into Trouble at School (Storynory).

I make jokes, wondering aloud if there is a Hugo Chavez learns English site and what its content and message would be.

With the teachers previewing the Hannah Montana podcasts, Alejandro leaning as far back in his mini blue chair as the molded plastic will allow, and Maggie talking about sex and butterflies and science projects with another teacher, I slip out of the library and walk up to Blanca's classroom to load a PowerPoint presentation of some of the works at New York's Museum of Modern Art onto her computer. It only takes a few seconds and I wave goodbye as I get up to leave.

Will you be here next week? she says, looking past the group of students with whom she is working at the table by the window.

No, I've got part B of my comprehensive exams, I say. They wish me luck and I head back down the stairs and down the hall to the library.

A few minutes after I reenter the library, Alejandro brings up a list of links on the screen to the left of the tables. He shows BreakingNewsEnglish.com and VoiceOfAmerica.com, two news services that offer written and spoken news at a slower pace as well as accompanying group and individual exercises and activities. He previews LibriVox, an effort to create a spoken version of every book in the public domain and Digital Chalk, a web application for creating presentations.

Let's go to Discovery Education Streaming which used to be United Streaming, says Alejandro bringing up the site on the screen and showing them some of its different features before letting them explore the site's content on their own. As Virginia and Ms Saucedo search for and download video files from the site, a group of what look to be

first graders come into the library walking in a wavering single-file line in the direction of the raised risers in the back of the library, occasionally bumping into each other as they look around the semi-darkened front portion of the room. Their teacher says hi and asks Alejandro a question about a technology request she made on behalf of the school. I realize that she is probably the campus technologist and make a mental note to ask if she would agree to an interview later.

Jolene Hayes, another instructional technologist comes soon after and starts helping Alejandro configure the media settings on the two iMacs so they play audio and video files with Quick Time by default.

Which do you think I need to select, he says as the screen displays several media preference options.

…

Ellen answers his question.

They begin trying to write some of the files they've downloaded onto their iPods.

Each of the files needs to be converted into an iPod friendly format first.

Take 15-20 minutes to grab some stuff off of united streaming, he says as the computers convert the files in the background.

I ask Virginia if she has a place picked out for the iPod center, she says she doesn't yet but thought there would be room somewhere near the other computers.

I'm going to put mine where the other computer that doesn't work is, says Ms Saucedo.

You mean they didn't fix them all when I put in that fire ticket?

[They've done] nothing.

They didn't wave their wand? Here I was thinking that you had 4 working computers all this time.

In the far corner of the library, Maggie is finishing up reading the book *Little Willy* to Ms O'Brian's first graders. As they choose books and sit in a line ready to leave the library, I introduce myself to Laura and ask if she would be willing to be interviewed. She agrees, so long as it doesn't interfere with her teaching.

We break for lunch agreeing to meet back in the library at 12:30pm. While we eat, Alejandro asks me about my research interests and I ask him about the possibility of getting an iPod station set up in the school library as well as what he can tell me about how Fire Tickets work. He says that there are no plans to integrate iPods into any district libraries. He also explains that the instructional technology and technology support departments are separate. He is not sure how they triage their support requests, otherwise known as Heat Tickets.

A few minutes after 12:30PM, the training resumes with a focus on the iPod Nanos themselves.

At two, we'll take everything up to the rooms to get things setup, three at the latest, says Alejandro. He shows Virginia and Ms Saucedo the iPod locking mechanism, how to slide the devices of their quarter-inch thick, semi-hardened, black rubber cases, and how to position the clear plastic screen protector, letting them each practice until all the iPods are unlocked nestled in the rubber cases.

Does anyone know Dansk? he says scrolling through the list of available operating system languages. I raise my hand, reading Danish is pretty much the same as reading Norwegian. I practically minored in Norwegian.

Use the English setting, he says.

Between setting the language on the iPods, Virginia asks Ms Saucedo if she too is doing after-school tutoring leading up to the TAKS test. She nods.

Then the fun begins, I say.

No the fun ends when we leave here, says Ms Saucedo.

I'm curious about how you all introduce them, says Alejandro.

Jolene, wearing a black blouse with the left sleeve rolled up her forearm, a gray knee-length skirt, and black slingback open-toed shoes, talks about how a 6th grade teacher they worked with had her students generate ideas about how to care for and use the iPods in the classroom.

Once each unit was configured Alejandro motions to the microphone extensions that connect to the iPods and suggests they try them out.

I'm terrified of breaking it, says Ms Saucedo handing it to Alejandro to remove the accessory from its plastic packaging.

I hand each of them a book of poetry from my backpack, *Black Zodiac* to one and *Negative Blue* to the other, both by Charles Wright. Virginia turns a few pages and then sets it down, turning around in her chair to select a book from the book shelf behind her and begins reading into the iPod. Ms Saucedo also puts down the book I gave her, saying that she'll take the microphone home and try it there.

You should take the iMacs home too. Just check them out, Alejandro says bringing up the Read 180 program.

Yeah, we didn't get that up and running [this year], says Virginia.

Don't get me started, says Alejandro, *but they had a great feature, one of the better ones, that was audio books which had reading strategies and thought provoking questions [embedded in them].*

They load the brief test files they made into iTunes, following Alejandro's instructions as to how to rename the file, set the artist's name as well as the genre.

How do you guys see using your mics with your students? he says.

For my student who doesn't read, who doesn't hear her mistakes, she can play it back, says Virginia.

Like math vocabulary, I'm thinking of that, it's such a big push, says Ms Saucedo. *Once it's in iTunes you can do so much with it,* Alejandro says nodding. He talks about an ESL teacher at the district's welcome center for international students who used the microphone like the conch in William Golding's book *Lord of the Flies* was used.

What do you think?

…

When I was teaching writing I think it would [have been] powerful to have them read it back to themselves, because when they read it sometimes they don't hear what they are doing, says Jolene.

In the background, Maggie is reading a story about a frog going through different stages of its life aloud to a class of what I guess are second graders.

We gave you two mics since you had seven iPods, they cost about sixty dollars. But teachers really like having the mics to have students dictate into [them], Alejandro says before noticing that the LCD projector has frozen.

We pause as he resets the LCD projector and advances the PowerPoint presentation.

Mr. Ridgehome lectured into the iPod mic and then played it back to them as a group. The next day he gave each student an iPod to control playback. The amount of notes taken based on the lecture increased greatly, he says, showing the quantity of notes side by side on the next slide, *they call it a Teacher in a Pocket.*

The final part of the day's session is an introduction to iMovie, a video editing and creation application that comes standard on their iMacs.

When asked, Ms Saucedo says that she's never used iMovie. Virginia tells the group how she used it to make a video with her students about Cinco de Mayo.

We like to use iMovie to re-edit media in all sorts of ways, says Alejandro looking at Jolene suggesting that she take over.

You're better, he says.

Jolene, her district name badge clipped three fourths of the way down the middle of her blouse, gives an overview of the functionality of iMovie, briefly demoing how to start creating a video, then turning it over to the teachers to try for themselves.

The last 30 minutes of [training in] iMovie is to give you a peek, next time we will go in depth, says Alejandro. Jolene stands next to Ms Saucedo as she clicks on different iMovie features. Virginia asks for help getting onto the Zapata server to access the

content in her folder. I reach over and smooth out my name badge which is curling at the corners.

Before I can stop myself I suggest to Virginia that she could use iMovie to make an individual TAKS pep-talk message for each of her students.

Yehhh, she says softly, not looking at me.

At 1:48pm Alejandro announces that they are ready to move the equipment up to the teachers' rooms.

What about the kids, should we wait? says Virginia without looking up from the iMovie file she is creating. Ms Saucedo asks what the question was also concentrating on her iMovie project. Virginia suggests that they wait a little bit, still not looking up from the screen.

Unsolicited, Alejandro shows Ms Saucedo how to log in to the Zapata server while Ellen asks them both to sign for the equipment.

Give the extra copy to the inventory person, Ellen says as she puts their mics back in their packaging again.

As Alejandro and Jolene pack up the peripheral equipment they tell each other about their families. Across the room two students are searching Wikipedia while another reads a book and the librarian reshelves books.

How do you feel about using it with your students, Alejandro says, *let me know if you need anything.*

Virginia asks how she can record herself and her students using iMovie. Alejandro breaks off his conversation with Jolene to show her how. After each step, Virginia writes down what he does in her notebook.

Ellen asks Virginia where she's from, Weslaco in the valley, she says. Ellen mentions that she just moved to Austin from McAllen not far from Weslaco.

Ms Saucedo figures out how to drop an image into the theme box and use it in her video. Jolene comes over and shows her how to add her published video file to her iPods.

We unplug the iPod stations from the iMacs and carry them upstairs to their classrooms. Alejandro tethers both the computers and the iPod boxes to the table on which they are placed. Virginia and Ms Saucedo get ready for tutoring while the rest of us make our way down the stairs and out the building.

Meet and greet

The six of us able to go met by the ATM below Flagship University's main library. Yu-Hui, Yun Soon, Chung-Kai, Woonhee, Sung and myself walked past the university museum and to the Fuerzas parking garage. As we took the stairs to the third floor and walked out among the cars parked there, they tried to guess which of these automobiles would take us to Zapata Elementary for an initial visit with Laura O'Brian before we started our research on the creative and participatory practices in her classroom and the school computer lab.

It's the one missing a hubcap, I say.

With four people in the back seat and Sung and myself in the front, I could feel the 1999 Corolla laboring harder than it would when I made this trip alone. On the way there I pointed out the men's homeless shelter, the city cemetery, the Flagship University laboratory elementary school, and finally the school itself, just south of a set of railroad tracks which seemed to separate newly built town homes and storefronts from older single family dwellings, long empty retail space, government subsidized housing, and an iron smelting plant.

We parked on the street, North of the school. Yun Soon and a few others put their backpacks in the trunk and we walked through the open gate in the chain linked fence, down the steps, and along the path toward the front of the school. Students were playing on the equipment, their backpacks on the ground around the edge of the swings and climbing structure.

As we turned the corner to use the intercom to request entry into the school, I saw Laura sitting with a girl on a bench off to the side of the playground equipment, the girl's feet swinging, her legs not long enough to touch the ground. Breaking off from the group I walk over and say hi. She says she can't go back in the school until all her second graders are picked up.

No problem, I'll give the rest of the group a tour of the campus and we'll meet in your room later, I say, waving Yu-Hui, Yun Soon, Chung-Kai, Woonhee, and Sung over to the bench.

That's too many, she says as they walk over.

We won't all come at the same time, no more than three at a time.

After I introduce them to her and we agree to meet in her classroom in ten or fifteen minutes, after we take a walking tour of the school.

We buzzed in and turned left, walking by the closed doors to the auditorium, past the long downward sloping hallway leading to the library and primary grade classrooms, past a flight of stairs leading to the upper grade classrooms on the second floor, turning into the office just before the fifty gallon fish tank. No need to sign in during after school hours Ms G told us. We went back the way we came and then down the sloping hallway to the library which was dark, its doors locked, continuing on, we walked by the first grade classrooms and a couple of kindergarten and pre-kindergarten classrooms all the way to the back doors leading out onto a larger playground, amphitheatre, and playing field. We turned around the way we came, stopping every few classrooms so Yun Soon and Woonhee could take pictures of the student work taped to the walls. We walked back up past the library, through the entryway and up the stairs. Passing third, fourth, and fifth grade classrooms we peered in the 2'x2' glass window on the door to the computer lab. The room was dark, empty, and locked as well.

Hopefully this is where we'll test FunWritr later in the year, I say. We were planning on doing several weeks of general observation in Ms O'Brian's

classroom as well as during her time in the computer lab followed by the introduction of FunWritr as an option for her students to use during their technology center time, during free time in the computer lab, and whenever else Laura felt our emerging application might help.

By the time we had made our way down to Laura's classroom door, located in an alcove close to the main office between the nurse's office and the copy room, Laura had finished releasing her second graders and was back in her classroom. She invited us in and we all sat on student desks which where were pushed together in groups of four in the middle of the room. She talked about her schedule and asked about our research. Chung-Kai and Yu-Hui introduced themselves as Marty and Richard. I added that they were both English teachers in Taiwan before coming to Flagship University to work on their PhD and Master's degrees in Instructional Technology respectively. Yun Soon, Woonhee, and Sung introduce themselves as Rosa, Woonhee, and James.

Rosa and Woonhee both worked in schools in South Korea, I say, *they're getting their master's in Instructional Technology, and James is getting his undergrad in computer science.*

The room was smaller than some of the other classrooms I had been in at Zapata. Hand-made and laser printed posters of the writing process and reading

strategies covered most of the open space on the walls. Additional literacy-related posters hung from string that crisscrossed the room.

We offered to help her if there was anything she thought we could do to help in terms of technology or anything else, she mentioned having a LCD projector that needed a replacement bulb installed, we said that we'd get right on it when we came the following week.

She showed us her leveled readers, the basal reader the second grade used, and other supplemental literacy resources. She agreed to email us a copy of her class schedule if we would remind her.

We thanked her, snapped a picture next to the administrative and instructional support staff welcome bulletin board outside the office, and walked back up the hill, piling into the Corolla for the return trip to the university in hopes of arriving before the start of Yu-Hui and Yun Soon's four o'clock class.

Well, what did you think? I said as we pulled away.

A nice fit several of them said, a school focused on language arts and literacy with a teacher doubly focused on the same with an interest in using technology to do it.

We made it back to campus a few minutes before four, I dropped them off as close as I could to the education building, agreeing that those interested in

observing in Laura's class would meet near the parking garage once a week in the morning and carpool over to the school.

I'll email Rosa and let her know the plan, I say watching her run up the hill in front of the education building.

Are we in a magic bubble?

A week later I arrived at Ms O'Brian's classroom door to find the lights off and the door closed. The dark brown wooden door's 2'x2' window made peering in to do a visual sweep of the room easy.

Are they in the computer lab? I say to the woman wearing a blue sweat suit, a visitor's badge stuck to the front of it, looking at the laminated schedule clipped to the outside of Laura's door.

No they're in the hall getting their pictures taken, she says pointing toward the school entryway.

Having just come from that direction I guessed that she meant the annex hallway that slopes down alongside the auditorium leading to the library, prekindergarten, kindergarten, and first grade classrooms.

Sitting on the floor, students lined both sides of the hallway starting about halfway down. Each student had their Scott Foresman *New Beginnings* basal with them. I sat down in an empty space on the floor along the right side of the hall.

Two books had been left there by students called up to the *on deck* photo circle near where the hallway leveled out and opened up to make room for an entryway to the inner courtyard. It was in this entryway where the photographer and her assistant had set up their equipment and were taking envelopes and photos.

It was also from the bottom of the hall that Laura, wearing a pink cardigan sweater over a white tank top, grey slacks, a black belt, and black strapless slip-ons walked up toward the woman in the blue sweat suit who was walking toward her.

Can you believe this? Ms O'Brian says, holding up a clear plastic sandwich bag half-full with coins and what look to be a few singles for the woman to see; *now I have to fill this out.*

She looks my way and says hi.

I'm happy to help out, I say, smiling.

Could you count to see if there's $12 dollars in there? she says, handing me the bag and the envelope.

I take several singles out of the bag, laying them on one of the books in front of me. It is opened to the first page of *The Old Gollywampus* by Toby Speed. I start separating the coins when Laura walks back over.

I'll just take it, if there's not enough they'll tell us, she says taking the plastic bag and picture envelope from me after I place the singles and coins back in the plastic bag and hand them to her.

Two students come up the hall and grab their books from in front of me and join a group of girls sitting and reading under the window on the other side of the corridor.

Okay, all the girls read this, says a girl sitting in the middle of the group, pointing to a particular page.

The others flip to the same page, from my position I can see illustrations of ducks on the open pages. They begin reading aloud, each at her own pace. Before most of them finish reading the story, the last members of their class move from the right side of the corridor, to the *on deck* circle, to the photographer's chair, and finally to the left side of the corridor.

Close your books, carefully and quietly close your books, and line up in line order, Ms O'Brian says, looking up and down the quickly forming, upward facing line.

Okay, she says and they start up the slope as I get up from my spot on the floor to go over and stand next to her.

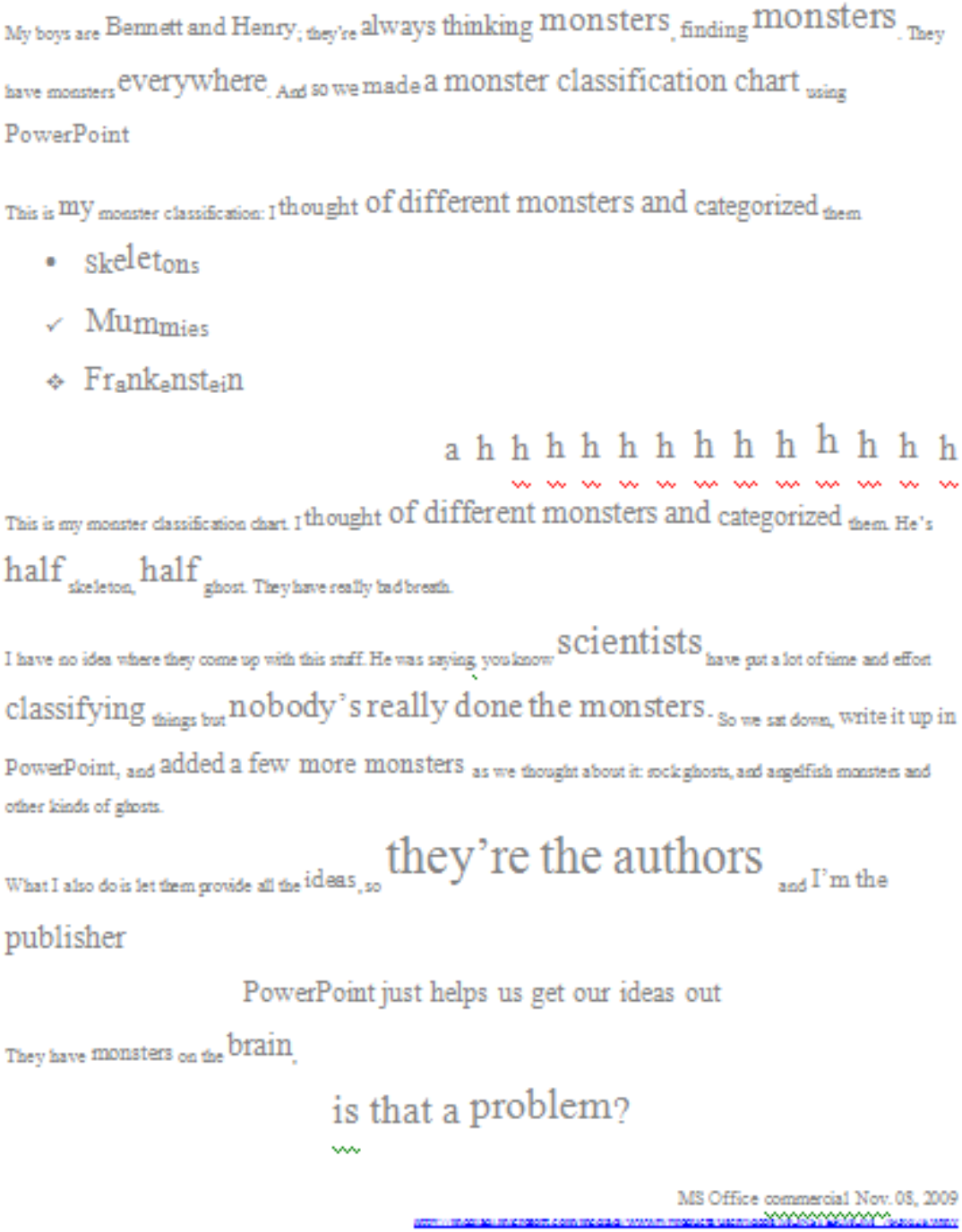

Figure 25: Societal discourses of technology.

Laura would tell me later that picture days are interrupted days wherein teachers help out the photographers by verifying money and writing names on cards. Students endure waits that make it hard to make good choices.

They're very active today and now it's all calm, I have to calm myself down, she says to me before giving the line leader the go ahead to walk to the next designated stopping point on the way back to the classroom.

Once inside, I sit in a chair by the science word wall close to the door. Ms O'Brian flips on the overhead projector and starts calling out the possible correct combinations for the homework from the night before. Her students follow along on their own paper, putting a checkmark next to correct answers and *x*'s next to incorrect ones.

Yesterday I told you guys, if you do not do your homework properly you gotta give me five minutes. Two ways, you're supposed to show me two ways, she says, moving around the room looking from paper to paper.

I move my chair around to get a better look at the screen. The first few math problems show a numeric value (e.g. $0.42), their task, draw two different combinations of coins that equal that amount.

You need to follow the instructions, if you can't read a word, sound it out, she says making marks on a few papers as she walks around the room, *if you still don't know, then ask for help*.

Taking a moment to look around the room, each student sits with three others in desks positioned to face one another. Around the periphery of the classroom are tables, bookshelves, and free-standing pocket charts.

Victor don't put a check by it until I've read it off. Ayy you guys are killing me, she says reading the next answer and then double checking a few of the students papers.

A boy in a *#5* FU football jersey hanging to his knees has no worksheet in front of him; instead he repeatedly opens and closes his green plastic box of crayons with his right hand while sucking on the index finger of his left hand. It was his baggie of coins and singles that Laura had given me to count before changing her mind.

Okay, how many got them all correct? she says, noting the hands going up around the room.

How many got one or two wrong?

You're raising your hand for both? she says, noting the overlapping response.

You can't have zero wrong and a couple wrong. Which is it?

…

Raise your hand if you missed a couple or more.

About half the students raise their hands.

How many did you miss? Laura says looking at a boy in a gray tee shirt.

Eleven.

Okay that's more than a couple, she says, *this is test prep.*

On the opposite side of the room from my chair are four black Dell desktop computers with matching black CRT monitors. Taped to one of the windows above them is a sheet of paper with several web addresses written on it in black marker: Starfall.com, Brainpop.com, and Tickettoread.com. Under the url for brainpop is a username and password.

Pass the papers to your team captain, we're going to do some fluency reading, she says as she collects the now-corrected worksheets from the students at the table next to her.

What we're going to do is our fluency reading. Remember when we did it last time, when we read the story, wrote about it, and then timed ourselves? This time we're going to read the story, time ourselves, and then write about it, which makes more sense.

Several students regroup themselves with no direction from Ms O'Brian. In the meantime, she peels mini yellow sticky notes off of a thick pad of them one at a time, handing them to the students while she continues to talk about the activity.

Remember when we time, one of you reads, one is timing, then we switch places.

Each partner group is supposed to write down the number of minutes and seconds that it takes each of them to read all the words of a story on a specific page.

What are we doing first, new story or old story? says Laura.

Old story, a few students respond.

Okay, you guys are level 3 right? Laura says as she passes out leveled readers to each pair.

Yeah

We're level five, says a student in another group.

Near the front of the room, a boy in a faded white polo shirt is staring at the blades of pair of scissors as he repeatedly opens them wide before snapping them shut again.

What level are you two? Laura asks him. *Does this look okay?* she says, not mentioning the level of the reader, prompting him to read. He reads a sentence while she listens.

Was that too hard or just right? she says to the boy still holding the scissors.

He looks up at her.

It was just right, you had a few problems but not too many, right? Laura says as she moves across the room toward a cardboard box in the corner of the room.

Practice it for about 2 minutes and then I'll be giving you the timers.

A few minutes later all the students have green, blue, and yellow plastic timers. They take turns reading and recording each other's times on the sticky notes. Laura moves around the room listening in, peeking at their recorded times and troubleshooting.

Sweetie you hit mode, says Laura as she bends down next to a student who is trying to figure out why his timer didn't start when he pushed one of its buttons.

Why won't it stop? says a girl to her partner, they are huddled together looking at the digital display framed in bright green plastic. As they try and figure it out Laura moves over to the boy in the gray shirt who has traded in his scissors for a blue timer.

Okay JT, right now you're pressing start and stop and start and stop, you're acting a little weird right now, she says inviting him to spend some time away from the other students near the door.

Use this timer, she says softly, crouching down next to him, handing him a small plastic sand-filled hour-glass, *let it run out, if you're still feeling a little strange turn it over again.*

She starts to stand up but then sinks back down and looks him in the eyes, her face relaxed, *are we in trouble right now? No.*

Stop, stop, STOP, says a student his fingers alternatively pumping the two large buttons protruding like ears from the top of the device.

I'm going to press this and then press this, says another pointing to the button on the top right and then top left of the timer, his partner, both hands on her book, her eyes focused on the text in front of her.

I'll tell you to go; he says looking at the timer display.

…

…

She looks up at him.

GO

She looks down and begins reading the first sentence.

No wait, he says staring at his timer, *okay go.*

Instead of starting over she just looks at him and takes the timer back.

Okay just so you know bud that's kind of a weird time, says Laura looking down at the sticky note in front of a student, *we don't have 33:88.*

Around the room rises a din of words tumbling out one after the other.

Oh, we don't write those mini seconds, that's really fluent, that means you read 99 words in a minute.

Okay eyes on me timers down, timers down, timers down.

My frustration level is getting high, Laura says, looking at me.

There's a knock at the door, the Title I reading coordinator comes in and collects three students.

Close up your books and next time we're going to start on the next story.

Laura would later tell me that this was one of the first times they used the timers. She said she knew it would be a struggle, but felt that it would get better with practice.

She gives a few students the job of collecting the timers and fluency readers placing them back in their respective boxes.

Go to your centers quickly and can I see O'Leary's group.

To the left of the door are a series of slatted wooden closet doors running the length of the wall. Seven laminated pictographs are taped in a single vertical row down the middle of one of the centermost closet doors. Next to each pictograph is a 3"x2" sticky note with the names of two students written on it, each one curling up on the bottom.

Moving clockwise around the periphery of the room and just past Laura's small group instruction table on my left is the computer center equipped with three Dell computers, headphones, and the aforementioned website urls and login information taped to the window. Past a bookshelf of leveled readers is a free-

standing blue vinyl pocket chart and a tub of words and punctuation written on index cards. Two library centers, one mainly nonfiction and the other young fiction take up the back corner and far wall. Under the word wall is a table for the story creation / reader's workshop center, followed by a smaller table with two cassette players and large plastic headphones making up the listening and reading journal center.

Where'd the class go? a student says looking up from her book in the library center toward Ms O'Brian.

Some are missing, some are at HOST, and some are in the restroom.

Where'd everybody go? says another student a few minutes later after turning around in her seat at a computer to see just three of his classmates in the room, two in the library and one wearing a long sleeved polo bright white around the seams and off white everywhere else standing in front of the poetry center's blue pocket chart, arranging and rearranging the index cards visible through the transparent sleeves –first placing the index card with the capital letter on the far left of the topmost row and the one with the period on the right side of the bottommost row.

Things are a little off today because we went to the computer lab and pictures, Laura says as she passes by my chair near the listening center.

More time out of the room than in, I say.

This is my favorite time of the day, centers, if I can get it started on time, she says as two students come back from the restroom and return, one to the listening station and another to the writing table.

There needs to be reading and less talking, Laura says looking at the four students now in the library centers, *not too hard not too easy but just right.*

The library group has sorted books on the floor, collecting all the books on sharks in a plastic tub and then and then putting the tub on the shelf. A boy in a dark blue polo makes a stack of all the books on tigers, comingling fiction with nonfiction before showing his collection to the boy at the poetry center, who is now holding a clipboard and a pencil, copying down the poem he has recreated stringing together and rearranging the index cards.

Are we in our centers? Are we in a magic bubble? Laura says looking up from her group work, scanning the class until the between-center chatter dies down.

I like how you are making predictions, that's what good readers do, she says before sending the group of students working with her back to their centers and calling over a boy in a brown polo to sit with her.

The two girls at the computer center, their miniature blue plastic chairs pushed together, lean forward looking from the screen to the url list taped to the

window, down at an index card next to them, to the screen again and then down at the keyboard.

After several cycles of this and some head shaking they move over to one of the other computers, again typing and consulting an index card. I get up from my seat next to the door and sit down in front of the computer they abandoned, moving the mouse to confirm that the cursor is not frozen.

The home page of the TicketToRead.com site comes up for the two girls and again they move their gaze from the screen, to an index card with the name Jameesa written across the top and a laser printed label with a username and password affixed to the middle of it, to the screen and back to the keyboard, each time adding a letter or two to the username field and then a dot or two to the password field.

Turning my attention back to the CRT screen of the Dell Optiplex in front of me I count nineteen open Internet Explorer windows, some of which are frozen. I close them one by one, force quitting those that are not responding. I do the same for a handful of instances of Inspiration/Kidspiration that are also running.

The girls at the computer next to me click login and the screen changes, showing an internal navigation menu with the words *First Read*, *Words to Know*, *Think About*, *Read Along*, *Practice*, *Record*, and *Quiz* displayed across the bottom.

Ess tee is what? I hear Laura say behind me.

Sta

Dee ahr is what?

Dra

Jameesa and her center partner read passages in low but audible voices, answering questions, and collecting tickets.

I wonder to myself if testing FunWritr with second graders might be difficult given the time it took two of them working together to log in to a website much less type a story or make one up on the fly.

It's time to go to specials, says Laura, reminding them to take care of each station.

You want to know what that strange man is doing in our classroom? Laura says smiling as they line up by the door to leave for art, music, and physical education and I continue typing up notes.

I turn off my AlphaSmart 2000 note taking device, grab my backpack, and walk out of the classroom in the back of the line but before the back line leader who motions for me to go before him so he can close the door.

I'll try and do a better job of introducing you next time, she says, giving the line leader the signal to move to the next predetermined stop point down the hall to the left.

And I'll try and do a better job of getting here on time.

She looks at me with an eyebrow raised, the right corner of her mouth upturned, shaking her head. I smile and turn down the hall to the right toward the sloping hallway and the library.

You're looking good, Maggie says looking up at me after I enter the library. Dressed in a jean jacket and jeans, she is surrounded by a group of students; one by one she scans their card then scans their books for checkout.

Thanks, I say as she repeats the checkout process for a dozen or so third graders while telling me about the Texas Book Festival at the Capitol.

No books to shelve? I say, glancing toward the empty reshelving tubs atop the 3' high stacks, once the class of third graders is escorted out the door.

She sets me up with a scanner connected to a laptop asking if I would scan each of the books on the paperback spindles in the back corner of the library next to the overstuffed chair and ottoman.

Are you in Virginia's room again this year? she says as I scan in four copies of Sharon Draper's novel *Double Dutch*. Last year I volunteered after school, helping Virginia and her fifth graders create video projects including a weekly news program shown to the entire school during morning assembly.

Ms O'Brian's, I say, *Ms Ortiz wants me to wait a little while longer.*

She has one boy who has everyone in knots.

I scan the Zapata Elementary Library barcodes on each book, working from top to bottom, stooping a little more with each row. Some books are in like-new condition, others like the three copies of Rick Riordan's *The Lightning Thief*, halfway down the spindle show heavy creases and dog-eared pages. We speak back and forth across the library, trading thoughts about which hospitals we visited over the summer and how the people we knew who were treated there are faring now.

By the time I make my way down to a copy of Riordan's *Sea of Monsters*, another class enters the library.

Hearing a familiar voice, I straighten up to see Virginia surrounded by many of her fifth grade students, several of whom I recognize from Ms Saucedo's class two years ago. She asks Ms Nash if she can read to the class. Maggie agrees and starts getting them seated on the carpeted risers in the back corner of the library. Virginia comes over and gives me a side hug, saying she is sorry she hasn't gotten back to me.

No problem.

Probably in a couple of weeks.

No problem.

She nods and goes over to the coffee table near the paperback spindle, spreading out index cards on it before leaving the room, her half-day aide staying

with the class, sitting on the far left hand side of the bottom level of the risers, her head turned toward them as Maggie reads the class a poem, enlisting them to chant the refrain each time it comes around.

After the poem the students come over to the coffee table and pick out the index card with their name on it and begin looking for books. Some search on their own, others in groups. I hear two girls telling Ms Nash that they are working on reports. One reports that she has Georgia.

I grew up in Georgia, says Maggie, leading them over to the computers near the front of the library.

She gets her started, asking the other girl which state she has, inviting me over to watch saying, *you're gonna want to see this*.

Rhode Island.

That's where my daughter's boyfriend lives, Maggie says, opening up a browser and navigating to the WorldBook online website.

You've got 45 websites, she says, showing her several different online sources.

I go back over to the spindle to finish scanning the books on its bottom row. Several different groups browse the spindle. A boy in a white tee shirt, wearing a rosary around his neck asks me where he can find R.L. Stine's Goosebumps series. I point him to the ST portion of the fiction section on the far wall.

I can see the future, says another student before asking what book he should get.

Well what types of books do you like?

I like the Lightning Thief and the Harry Potter series, says another boy, *I have book seven because that's the only book the library doesn't have.*

We walk as a group over to Ms Nash and they restate their queries. A girl holding Simon James' book *Baby Brains: The smartest baby in the whole world*, walks over with us, keeping quiet.

Maggie asks if any of them has read Ingrid Law's book Savvy.

You should read it too, she says looking at me, leading the group over toward the fiction wall.

Ten minutes later the aide ushers the line of fifth graders, books in hand, out of the room. I finish scanning in the books on the spindle and start typing up fieldnotes on my AlphaSmart 2000.

I place the scanner and laptop on the checkout table and wave to Maggie who I can see through an internal window, is eating lunch in her office. She comes out and thanks me, giving me a printout of an email she received about an educational computer game. I thank her, look at it briefly, tuck it into my bag and head out the library door and up the hall way.

Mr San Vicente's sixth graders are sitting along the wall waiting to have their pictures taken.

Hey, I know you, a girl says pointing at me.

I know you too, I say smiling at them as I walk past.

Who is it?

Who is he?

That dude helped me get an A on my project, I hear another student say as I walk up the top third of the hall.

It's a process

Yun Soon and Yu-Hui were waiting for me when I pulled in to the *no parking* area behind Flagship University's museum of fine arts to pick them up. Both were in their second year of a two year masters program in Instructional Technology and neither of them could remember having to wake up so early since they themselves had been public school teachers in Korea and Tawian before coming to the United States.

We walked into the front office at Zapata and signed our names, the current time of 7:56AM, and Flagship University Research in the visitor's sign-in binder. Ms G the attendance clerk was working her way through the queue of students in

need of tardy slips. After finishing with one student she walked around to her desk and bent over her computer.

What's your last name again? she says, looking at me.

Olmanson.

That's right, she says, looking down at her computer, pressing a few keys and making a mouse click.

A 2"x3" black and white photo ID badge comes out of the label printer next to her monitor. She asks Yu-Hui and Yun Soon for picture ID. Yu-Hui hands Ms G his Flagship University ID while Yun Soon searches her pockets and backpack.

It's okay, says Ms G after printing Yu-Hui's badge and handing Yun Soon a blank name badge.

She writes Rosa on the badge and affixes it to her coat.

We walk past the fish tank, take a left at the nurse's office and wave at Laura who sees us through the door, sending a student to open it for us.

Hey you were here last time, says O'Leary pointing at me.

Each student has a book and is reading at their desks.

As we look for a good spot to sit Laura tells them to take a seat on the floor near the non-fiction bookshelves.

I'll introduce you and let me know if I don't get it right, she says looking at us, we are standing near the blue poetry center pocket chart.

They are here to observe.

Are they students who want to become teachers? says a student.

They are making a web-based learning activity for children, she says, looking at me.

They are being kind of like scientists, they're going to be observing with their eyes and writing stuff, she says to them.

We sit down at the chairs buy the computers. Yun Soon and Yu-Hui each have a notebook and I have my moleskin as I've forgotten my AlphaSmart 2000.

We're going to finish our [writing]. If you finish, you can use Ticket To Read so you might want to bring your notecard with your username and password, she says.

I know mine, says one student.

They fish white folders out of their desks and get into line holding their folders, each of which has a label with their name laser printed on it in red ink.

We're writing our personal narratives, says a girl looking up at us, standing near the back of the line.

It's a process, says another nodding.

We leave the classroom following the student line, the back line leader trailing us, closing the door behind us. Once the line clears the copy room, it

makes a left turn, stopping at the back door of the office, at the bottom of the stairs, and at the top of the stairs in front of the computer lab.

The computer lab is rectangular with computers on tables around its periphery on three sides and a smaller rectangle of three sets of tables pushed together with computers on them in the middle of the room.

As the students sit on the floor facing a large pull down screen, Yun Soon, Yu-Hui, and I stand by the sink. The lights are off but natural light comes in through the four windows along the far wall.

Laura grabs a four foot long wooden dowel rod off the end of one of the middle tables and extends it above her head poking at the underside of an LCD projector mounted on the ceiling.

On her third poke it lights up and Laura sits down at the computer connected to the projector and starts moving the mouse around and clicking. The LCD projector however does not mirror the computer monitor, showing only a stand-by/no signal screen.

You already know how to do this, she says, going over and sitting at one of the computers directly under the screen.

Eyes on me, she says before typing *zapata2d* in the username field on the Windows operating system, and typing the same string of characters in the password field.

Next she shows them how to access Microsoft Word as well as how to navigate to and open their saved file.

If you have lots of red places and green places I'll come around and help you but you should be able to do that on your own, she says before telling them to go to the same computers they were at last time.

Raise your hand if you need help, Laura says once most students had logged in, opened their saved document, and recommenced typing their personal narrative.

Several hands go up at the same time. Yun Soon, Yu-Hui, and I join in, moving from raised hand to raised hand showing them how to make a green squiggly line disappear by using the delete key to remove an extra space, how to use the arrow keys to change the cursor position, showing them how to right click to get spelling suggestions to come up.

Each student has a handwritten version of their writing which he or she types into a file. Some hold the paper in one hand and type with the other, some lay the paper flat on the table, a few wedge it in the F key row and lean it on the bottom of the monitor.

Progress is a tangled loop of attention going from screen to paper to keyboard back to screen, back to keyboard, and then paper again. For the uninitiated, letters take turns disappearing from the keyboard, the cursor jumps

around on its own, a single space between a word seems inadequate, and entire lines from handwritten drafts get skipped or typed twice.

Laura asks if me if one of us can help Jameesa who has yet to begin. I nod and whisper for Yun Soon to come over, explaining the request.

You want me to type it for her? she says looking up at me, her head tilted so her right eyebrow points up toward the ceiling. Laura explains that typing causes Jameesa too much anxiety. Jameesa looks on as Yun Soon sits in her chair and types her story about swimming in a cold pool with her family.

You're missing some of your details, Laura says to a boy who declares he is done, *point to the screen while I read.*

I help a girl with a bow in her hair eliminate spaces in a story about buying riding horses in Mexico on her birthday.

This is their third time, Laura says now walking around the room in a slow circle, *maybe we should have started with a simpler activity.*

Every few minutes another student gets confirmation from Ms O'Brian that she or he is finished and can save their story and use TicketToRead.com or BrainPop.com.

A few minutes before 9AM, Laura tells them to carefully and quietly line up to go back down to the classroom. As the students line up, she asks Yun Soon, Yu-Hui, and I if we know the keystroke that will get the LCD projector recognize

the computer to which it is attached. We follow her over to it and watch her try a few different things, none of which seem to work.

That's an interesting way to turn it off, I say as Laura pokes the power button on the bottom side of the LCD projector with the dowel.

This is better, she says giving the line leader the nod to take the class into the hall, *we went through three remotes.*

We walk down the stairs together, Yun Soon and Yu-Hui follow the class and I go back to the library to type up and expand upon the things I jotted down in my moleskin.

Ask me about weeding books, says Maggie while helping a student look up information on a computer across from mine.

I nod and continue typing.

An hour later Yun Soon and Yu-Hui come down to the library, I show them how to shelve books and we spend about fifteen minutes reshelving before heading back to campus in time for Yun Soon's class.

Where thud belongs

Yun Soon and I sign our names in the visitors binder at Zapata Elementary at 8:48AM and, once Ms G scanned Yun Soon's ID into their system and printed

our stick-on picture ID badges, we walked the twenty or so paces between the office door and Laura's second grade classroom door.

Peeking in between the laminated schedules taped to the window, I spot Ms O'Brian bent over a sheaf of papers spread out on her small group and one-on-one tutoring table. Looking toward the door she smiles and I try the door. She says something to a student in a leather Harley Davidson jacket and he puts his book down and comes over to open the door.

They are doing DEAR time, she says looking over the group, some of whom read at their desks, others flip through books in shallow plastic tubs, a few read a page or two of the book they are considering.

I have two new kids, actually ESL kids, one from Morocco, and one who is more Hispanic, Laura says before telling the class to sit down on the floor in the non-fiction area of the library.

I nod and raise my eyebrows a little in interest at her statement. As the students gather at Ms O'Brian's feet, Yun Soon and I take a seat next to the computers. Laura holds up a copy of the four-page December Scholastic book order catalogue.

Tell me if you don't feel okay, she says to a girl wearing a teal jacket with a faux fur liner. The girl nods.

Here's a book that's a dollar, Laura says, leaning forward in her chair, pointing to a thumbnail image of a book in the lower right hand corner, *bring a dollar or bring two bucks.*

Junie B. Jones, she says pointing to a thumbnail of one in Barbara Park's series, *I'd say this is level 20-24, Nancy, Charlana, O'Leary, we're almost there.*

She puts the catalogue down behind her and says that she has a special announcement.

All the first and second graders at 1 o'clock, Ms Tamboril and Ms B are going to give you a gift and the teachers a gift. You are going to watch a movie and the teachers get to do whatever they want.

I'm looking at crisscross, she says to Victor who crosses his ankles and pulls them close to his body.

We really can't go past yellow. We probably won't have time to do math, we're not going to do science.

Laura would tell me later how she did not want to skip math or science but that special events, presentations, announcements, and movies required her to alter her schedule. Mapping out the rest of their day before the movie, she tells them that they'll do some context clue work.

Does anyone remember what context clues are?

Luna? she says nodding to a girl wearing a gray sweatshirt with lavender accents.

It's like words that help you with words you don't know.

Laura nods.

Let's see, we gotta get started on our writing project cause we're going to write an animal report, she says, asking a girl in a pink Hello Kitty shirt and pink corduroy pants to bring her a dry erase marker.

She writes a list on the free-standing white board next to her chair.

Context Clues

Animal Study Non-Fiction

Center Work

Guided Reading Centers

Tomorrow I'll change the centers, she says pausing, *the next two weeks we won't be doing reading groups because I have to test you guys. I've gotta find out how many words you read. I've gotta do TPRI.*

She continues writing.

Special Areas

Centers

Math if there's time, she says, writing it on the white board.

Math

Lunch

Bathroom Break

--Movie--

Ms O'Brian sends everyone back to their desks, asking one student to turn off the lights. Yun Soon moves to the other side of the room near the writing center only to have to move again when Laura pulls the screen down, right were she's sitting. She sits in Laura's library chair instead.

Standing next to an Elmo document camera positioned in the middle of the room, Ms O'Brian slides a piece of paper under it. As she adjusts the Elmo, a worksheet titled *The Trouble with pets* comes into focus on the screen hanging down from above the whiteboard and writing center.

Together the class reads aloud the instructions on the worksheet. They are to figure out the meaning of the bolded words within the passage based on the words and sentences that surround them.

Laura asks if they can spot any words in bold in the multi-paragraph passage.

Sore? someone to my left says.

In red marker Laura underlines sore. After pausing she also underlines *thud*, *ankle*, *persuade*, and *damage*.

She reads the entire passage aloud telling the class to read it in their heads along her. As she reads, Laura's voice is trailed by sixteen other whispered, mumbled, rising and falling voices.

The classroom telephone next to the door begins and continues ringing throughout the reading of the second paragraph. As Ms O'Brian finishes the final sentence in the passage, someone slips a key into the lock on the classroom door and twists it open. A woman in a red sweater takes half a step into the room.

Saucedo wants to know that all your kids have been tested.

Yeah, is that who's been calling?

Yeah.

Laura asks a student sitting near the door to turn on one bank of lights, he does and the image on the screen looks like a mimeographed version of itself, the text taking on the appearance of a lavender watercolor.

Try the other way, she says.

The boy flips the two switches in opposite directions, restoring contrast and color to the projected worksheet while giving ample light for completing the worksheet.

Come over here, Ms O'Brian says to the girl in the teal coat once she hands copies of the worksheet to another student to pass out, *do you feel okay?*

She went home with a 102 temperature [last week], she says in my direction before reaching down to feel the girl's forehead before sending her to the nurse to get her temperature taken.

Laura tells them to work in groups at their tables on the matching exercise below the passage they just read together; their first task is to underline the bolded words.

Normally it's something I would have them read but it's kind of a higher text, Laura says to me.

Umm hmm, yeah, I say looking up at her.

The reason I read this is because it's kind of a higher text, she says to the class, walking from group to group, looking down at their worksheets.

Okay now read it next to each other so that if one of you makes a mistake the other can help you out.

I think you guys can actually read this but I don't want you guys to make too many mistakes.

While the groups read in teams of two Laura affixes a sticky note on the margin of the worksheet.

Thud means… written on the top and

The clue was… written on the bottom.

What does it sound like when we read to each other? she says looking around the room.

If you've read it through twice then read it a third time, I want to give everyone a chance to read it at least once.

Several minutes later she passes out sticky notes to each table, stating that they need to select from several choices the word or phrase that best approximates the meaning of *thud* in the passage.

You want to read the sentence first then if that doesn't help you figure out what the word means. You want to read the sentence before and the sentence after.

I'm trying to understand why this worked so well last week, how I explained it so well. Now they're just staring at me, she says looking at Yun Soon and then at me.

You are not answering if you are raising your hand, she says to several students with their hands up, *show me what group work looks like.*

In the group closest to me a boy lifts his paper up to eye level and lets go, watching it float down. His partner beats out a rhythm on the desk with his fingers. Back from the nurses office, the girl in the teal jacket sits with her nose scrunched up.

I just farted, says a brown haired bespectacled girl.

As Ms O'Brian walks from group to group, I scoot my plastic blue chair closer to the group next to me, my AlphaSmart 2000 on my lap.

What are you doing? says the brown haired girl eyeing me over the rounded tops of her glasses.

Taking notes.

She turns back to her group and stares at her paper, eventually she and the girl with the teal coat each write something on their sticky notes before handing them to the girl collecting them.

Once you fill out the Post-It then you need to write where thud belongs, Ms O'Brian says

What kind of notes?

Notes about what is happening in the class.

Ohhh.

Come sit down on the carpet in the overhead space, says Laura motioning toward the floor in front of the screen. She tells them they are going to do the first two together once she shows them how a dictionary can help.

There's no carpet here, says a boy before sitting down.

Laura writes on a sticky note and then places it under the Elmo so everyone can see.

syninym

This is not cinnamon that you put on your toast in the morning, she says picking up a classroom dictionary and paging through it.

No, she says putting the dictionary down and looking at the word projected on the screen, *synonym.*

Picking up the sticky notes she writes it again.

synomyn

Cinnamin, synomin, cinnamon, she says looking at the word shaking her head.

Synonym, I say after practicing it in my head a few times.

She writes it again.

Synonym

Turning back to the worksheet and the bolded words, Laura looks up *thud* in the dictionary reading aloud the definition as that of a *dull heavy sound*.

She raises the dictionary up in her hand keeping the front and back covers parallel with the floor before pulling her hand away, letting it fall.

That's a thud.

Arturo what does the word ankle mean? she says looking at a boy standing to the left of the space in front of the screen.

Painful, hurting, he says taking his fingers out of his mouth.

Ms O’Brian reads the sentence after the one with *ankle* bolded asking him to try again. The sentence describes how swollen and painful the joint between the foot and leg is for the injured boy in the passage.

…

Arturo stares at the screen. The boy sitting next to him stands up and whispers in his ear.

…

Laura calls on someone else who answers. Arturo jumps up and lands on his knees with a thud.

I want you to read the sentence before and the sentence after, she says before sending them back to their desks to work in groups.

Wow, I say, getting up from my chair and walking over to Ms O’Brian standing next to the Elmo, *Arturo’s was really hard.*

Yeah, sometimes these lessons work and sometimes they don’t.

The groups reform around their desks leaning over worksheets and yellow sticky notes. Some read the bolded words out loud, some read the sentences around each, filling out the sticky notes with pencils or markers.

Cool, says brown haired girl, extending her hand to touch the side of my dull green converse glasses with the bright green stripe down the middle of each bow, *it looks like they glow.*

Um hmm, I say looking at her and then down at worksheet and blank sticky note in front of her.

Do they?

No.

The light green.

Several minutes later Ms O'Brian gives the word to reassemble on the carpet in the non-fiction section of the classroom library once they are done filling out their sticky notes.

What did I say about yellow? What's wrong with yellow bud? Laura says stopping on her way to her chair in the library, to a boy using a yellow marker.

Can't read it?

Sorry, Laura says to Yun Soon who gets up so Ms O'Brian can sit there. *Table one and table two, bring over your point charts,* she says as most students have finished.

Two students bring over the table one and table two cards. Laura adds a tally mark to each of them and hands it back.

I felt that they were working together whereas table three and table four were kind of sleepy, she says, making eye contact with Yun Soon and I.

Okay, you guys can keep working on your post-its while we move on, she says to the few students still not sitting with her in the library area.

Zain, can you turn off the overhead?

A boy in a blue sweatshirt, and faded jeans gets up from the library area and walks over to the Elmo, he puts his hand under the camera moving it and the worksheet underneath it back and forth, his eyes on the projection screen. He pushes the power button with his other hand before returning to the carpet and putting his thumb in his mouth.

In order to be a good author we need to study other books, Ms O'Brian says, sitting in her white armless office chair, fourteen students at her feet.

She tells them that before they can write a book of their own they need to understand different kinds of text features.

Each student receives a book with a sticky note affixed to it displaying their name. One student gets a book about penguins, another foxes, another snakes.

Why are we doing all this? What are we getting ready for? she asks after pointing out the captions under the pictures and the details of each animal in a book called Animal Reports.

…

O'Leary raises his hand and asks if he can go to the bathroom.

We're going to do a bathroom break but first tell me why are we doing this? What are we getting ready to do?

Bathroom break? says Arturo.

Yes but what are we getting ready to do?

After explaining the connection between the animal report writing project they are about to start and some of the features embedded in the book she has selected for each of them based on reading level, she tells the class to line up. We walk down the hall to the left and the sixteen students sit in a line outside the bathroom doors, entering in groups of three or four.

I did it, says Ms Tamboril.

Congratulations, I say as we hug, *what are you going to do now with no data to collect or writing to agonize over?*

She laughs and I introduce her to Yun Soon before she heads down the hall and we, the restroom break over, head back to the classroom.

Get out your center folder. You're going to make a pile of your word wall, literature responses, sentence center and song center work. Let's see what table gets done first, she says, sitting down at her small group and one-on-one tutoring table. Yun Soon and I sit by the computers, next to group four.

Once they've found their folder in their desk they start taking the individual pages out of its sleeves, sorting them into piles. Some of them turn and stare at the physical space each center occupies as they organize their piles.

Do we do work when we're in the library center? Ms O'Brian says after Victor mentions that he doesn't seem to have any work for the library center.

No.

No, we read books but no writing work, do we do work at the computer center?

After sorting, they take them to Laura who staples them together by center.

I have six, says the brown haired girl twisting around in her chair slightly to look at me.

What do you do with them?

We take them upstairs and we can buy stuff.

Like what?

School supplies.

We do this every two weeks, Laura says, looking over at us, *in previous years I never checked their work. This year I want to hold them accountable.*

What does P mean, Yun Soon says to me pointing a card with a large hand written *P* on it, followed by varying amounts of tally marks.

Why don't you ask Luna? I say motioning toward her.

Luna explains in detail, finishing by saying that *when we get six of these we go to the principal.*

She is so cute, Laura says in a whisper as she walks by.

I'm gonna write about this

Chung-Kai, Yu-Hui, Yun Soon, Woonhee, and I arrive at the school office, writing our names in the visitor's book, pressing our black and white photo ID stickers to our clothing and head up the stairs toward the computer lab.

Laura is sitting at a computer with her back to us. I knock on the door which is open a crack.

Come on in, she says turning around.

I put my backpack down on the counter next to the sink, fish out my AlphaSmart 2000 and look around the room.

On the screen in the front of the room, the LCD projector displays a portrait-oriented page with a horizontal banner on the top and six square image boxes arranged in three rows. Each box has a text callout box or bubble with a suggested type of information about their animal: babies, food, habitat… In the upper left hand corner of the application is its name, Comic Life.

Getting up from the computer at which she was sitting, Ms O'Brian explains that their goal for today is for each student to fill their six boxes with headings and related facts about their animal. On the table next to each student's computer is a hand-written report with different information about their assigned animal.

Chung-Kai, Yu-Hui, Yun Soon, Woonhee, and I walk around the lab.

Don't they use periods in comic books? Laura says, leaning over to look at one student's text.

I go over to Jameesa who has her hand up. She tells me that she wants smaller pictures as they currently extend past the size of the boxes meant to frame and contain them. I show her how to click on the image and then use the resizing handles to adjust them. Once I've shown her, I undo the image I resized and talk her through the process. I get up, leaving her to resize the other two images that are bleeding beyond their borders.

About an hour later, Ms O'Brian had deemed twelve of the seventeen students finished with their Comic Life version of their report, complete with title, author's name, and images corresponding to their captions and headings.

I usually don't take over until the end when they write things like this, Laura says, leaning over one boy's computer, *I am a snake. I may bite you or cure you.*

That's really, higher level, she says, *okay move over bud*.

The boy moves over and she sits in front of his computer and begins highlighting a section of his text.

Walking by Luna, I notice that she's using TicketToRead.com. Near the logo for the site is a banner stating over one million readers enrolled, more than twenty million passages read, and ten thousand plus users currently online. She tells me that she wants to buy more things for her personalized clubhouse.

I love the vocabulary you're using, Laura says to the boy she is helping across the room.

I was born with that.

No you weren't, you learned it.

Okay, I learned it at my old school.

No you didn't, you learned words in all kinds of different places.

At 9:39AM we made the trip back down to the classroom. While we were still in the lab I told Laura that Chung-Kai, Yun Soon, and Yu-Hui had purchased some Taiwanese-style snacks for the students and would be happy to hand them out if and when she thought it was appropriate.

We're going to do writer's workshop, Laura says as the students return to their desks.

Plus, she explains, there's a treat.

They were nice enough to bring some food from where they're from.

Where are you from? She says looking at Chung-Kai.

Taiwan

And we can show that on the map, she says walking over to the writing station and pulling down on the handle of one of the wall maps above it. With Florida, Texas, and California visible on the bottom third she lets it roll back up and pulls the other handle revealing a world map.

Here's Texas, here's Morroco, she says pointing then pausing, *you're going to kill me if I don't find it right away.*

Chung-Kai, Yu-Hui, Yun Soon, and Woonhee pass out green and white wafers in individual packaging with Chinese writing on it.

Ohh I really really like this one, Laura says, holding up the remaining part of the white wafer.

It tastes like cereal, says Luna.

Some eat both; others nibble on the white one and leave the saltier, seaweed-based green snack untouched.

Mostly these last couple days we've been doing this and math, Ms O'Brian says as the students alternate between writing, eating, and not eating, *which is good because the year is almost over.*

I like what table three did, Laura says looking from one student group to the other, *O'Leary said, I'm going to write about this*. You can use the wrapper to help you with spelling.

She takes one of the green wrappers from Chung-Kai and leaves the room, returning a few minutes later with copies of the outer packaging for each student. Chung-Kai explains that it is called Sacima and she writes it on the board.

What's this? Jameesa asks me.

She has copied some of the Chinese characters from the packaging onto her paper.

Marty, Richard, would you mind coming over here, I say, *Jameesa has a question.*

She restates her question and they explain the meaning of the characters on the package.

Woonhee and Yun Soon are also asked questions about the meaning of the characters on the packaging. They get shown pictures and text from their animal reports too.

In addition to the single-page Comic Life animal report, Laura explains that they're also writing a longer multi-page version with illustrations and a cover.

When everybody's done with their books then we'll get construction paper and if they have maps draw a map to connect to the lesson on text features or pictures.

She goes around looking at each of the animal report books, making comments and suggestions as students

You've got a good index on this one too, she says, paging through several of the animal report books.

If you've got some good writing down you can go to centers, she says as Chung-Kai, Yu-Hui, Yun Soon, Woonhee, and I say goodbye and head back to our cars and the Flagship University campus.

LINE 7 COMENIUS

Figure 26: Map of sections in the Comenius line.

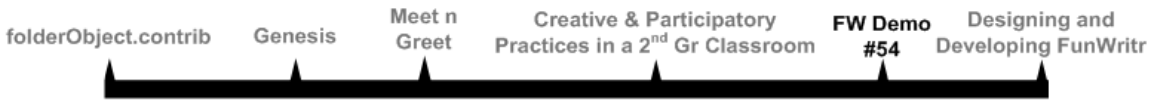

Figure 27: Alternative map of sections in the Comenius line.

folderObject.contrib

The Saturday before I was to attend a music festival, I drove into UT to spend a few hours working on the distributed biography project. There are nine members on the Distributed Biography team but I am the main/only developer. Each day I try to add functionality to the web application. Lately I've spent 6-10 hours per day writing code. I am not a professional computer programmer but I have learned how to get things to work based on an amalgam of stubbornness, literacy and online programming forums.

The favored cycle of functional computer programming goes something like this: a) describe the problem, b) break the problem into sub-problems/tasks, c) break up sub-problems in step b until no further reduction is possible, d) solve one micro-problem, e) repeat step d until one sub-problem is solved, f) repeat step e until all sub-problems are solved, g) combine sub-problems until the overarching problem is solved, h) at every step test to ensure that solving the next micro or sub-problem does not 'break' any previously solved ones. This cycle, with the inclusion of heuristic h, is the surest way to render development time a predictable quantity.

But time spent developing / coding is time I am not spending on the theoretical framework of distributed biography, or reading for class, or writing articles or gathering data. I feel a pinching in my lower back when I go on a coding binge. I can feel it happening as I code right up to the moment before class starts or a meeting begins. Yet I continue, believing that if I heed Joseph Campbell, some ambiguous, shifting redemptive moment will rise.

As usual no one was in the Games Room in the Flagship University Gym at this – early-by-undergraduate-standards hour. I turned off the florescent lights and sat at the square wooden table next to the floor-to-ceiling windows which looked out onto nine stories of undergraduate student housing. Five minutes after arriving I was ready to begin, laptop tethered to backpack, backpack tethered to table and chair, wireless mouse atop its green foam mousepad to the left of the keyboard, my water bottle, half full with yesterday's refill, on the right, Netgear wireless card inserted, three towels doubled over and then tri-folded placed on the table's edge to cushion my elbows and forearms and one black Gelco brand seat pillow –patent number 6,839,928 underneath me. I checked my gmail account, read the NBA rumors on hoopshype.com and then logged in to the zope development environment.

The current sub-problem was creating a way to let biography creators add users to their biographical projects. Until this feature was in place the application was distributed in name only. I started working on this the day before but had to stop in the middle of it. The next micro-problem within the sub-problem was to find a way to turn a string of formatted text into sets of dictionary objects within a list object and add a new dictionary object to it.

In python, the programming language used in Zope, a string is just text and/or whitespace enclosed within quotes three examples would be:

"this is a string", " this is also [] a string ", " "

A list is a group of strings or integers (numbers with no quotes around them) separated by commas and bookended by brackets such as:

[34, 19, "apple"] or ["emmA", "Katie", ["43", 43]].

A dictionary is like a list but each value has a key and each key-value pair is separated by a colon. Sets of pairs are separated by commas and bookended by curly brackets such as:

{"name": "lisa", "age": 23, "hobbies": ["swimming", "writing", "nascar"]}.

The strings in question looked like this:

"[{"username": "amy", "relation": "granddaughter"}, {"username": "alan", "relation": "grandson"}, {"username": "kathleen", "relation": "daughter_in_law"}]"

I shifted in my chair, it was already 9:19AM, only an hour and a half before I had to start packing up. No time. I was going to a music festival at 11:30, cousins from Minnesota had flown in, they were waiting back at the garage apartment on Annie Street. I needed to be on time. I took a drink from my water bottle and created a new python script file.

Attempt #1 (believe in the possibility of a single line of code -12 minutes):

I opened up Google and searched python string to list. The third entry, an asynchronous DevShed forum dialogue, began by questioning anyone who would put a list in a string and only at the end of the message, suggested using the eval() function. I looked up python eval() and learned about eval()'s instability (it leaks memory) and security issues (malicious python-savvy users could cause problems). I wrote a single line of code.

new_contrib = eval(folderObject.contrib).append(context.REQUEST.requname)

Result (simple error -attempt debug? no -nonviable):

Error due to security breach danger of the eval() function -not allowed in zope

Attempt #2 (manipulate the entire string as a string -25 minutes):

What would work best would be to split the string first every time the string contained "}, {" each section would have the contents of one dictionary set. But what if I just lopped off the end of the string and added the new dictionary object plus a comma?

```
if folderObject.contrib == '[]':                    #no contribs
        new_contrib = str([context.REQUEST.requname])
elif folderObject.contrib.find(',') == -1: #one contrib.
        new_contrib = str([folderObject.contrib[1:-1],
context.REQUEST.requname]) #strip [ & ]
    else: #multiple contribs
            new_contrib = folderObject.contrib[:-1] + ", '" +
context.REQUEST.requname + "']"
```

I got up before testing it, my back was already stiff, "I should take a lap" I said, swinging my arms and heading for the door. I climbed the stairs and opened the door onto the empty gymnasium running track. On weekends the track flow is counter-clockwise so I start in that direction. Below the track are four basketball courts. It was nearly ten and the sneaker squeaking and in-game chatter of two pick-up games of 5 on 5 were audible. Nearing the action I could see that both were populated by Saturday regulars. Court three featured the high-ability/closed game played by some Flagship University staff members and students. Court four hosted the mixed-ability/closed game of the Korean Student Association. Both groups generally do not allow outsiders.

Some of the Korean players wave up at me as I round the far end of the track, most Saturday mornings for the past three years I have played with them. I mouth the word 'study' and Minkyoo shakes his head. We usually guard each other or play as teammates. I exaggerate a shrug and smile, he turns his attention back to his man. Nearing the track exit, I start swinging my arms again and lifting my knees trying to exchange a sinking feeling for a centered one. I stop for a drink at the water fountain, go down the stairs, pull open the doors to the Games Room and sit back down. Time to find out if the code works.

Result (global error -attempt debug? yes, success? no):

Fatal error due to inconsistent grouping of dictionary terms

Not only did the code not work as expected but it broke other parts of the system. I test the system as a user would. It won't even let me log in much less add biographies. I open up several objects and consult the error log:

Traceback (innermost last):

Module ZPublisher.Publish, line 115, in publish

Module ZPublisher.mapply, line 88, in mapply

Module ZPublisher.Publish, line 41, in call_object

Module Shared.DC.Scripts.Bindings, line 311, in __call__

Module Shared.DC.Scripts.Bindings, line 348, in _bindAndExec

Module Products.PythonScripts.PythonScript, line 326, in _exec

Module None, line 51, in UpdateMembers

I run my left hand down my right jaw line, I've had a zit on that side of my face, just under my jaw for the past six days, my dermatologist calls it acne vulgaris. I have several blemish prevention creams and kits. I use the Proactiv acne prevention system used by Jessica Simpson, Vanessa Williams and Sean Combs. It contains face wash, toner, lotion and a triangular tube of clay mask. Additionally, my dermatologist proscribes Benziclyn –a topical antibiotic gel which must be protected from extremes in temperature. She also proscribes a 5% benzyl peroxide wash, which I apply in the shower.

I use them all and the zit remains, painful to the touch, about 1cm in diameter, well below the surface. I give the bump a tentative pick but it is no use, it is too deep and I shouldn't pick anyway. I return to the error log and glance at the time. 11:08.

In the next five minutes I will solve the global breaking problem but realize that I am already late and decide to pack up believing I have accomplished nothing productive. Over the past six days I've spent 43 hours writing code for distributed biography. Each day the number of exceptions and work-arounds grows a little larger and little more complex.

Genesis

Several years ago in late October, I sent out the following message on the Flagship University, Instructional Technology electronic list-serv:

Hello IT list members,

I am starting a Language Learning and Technology Design group. Membership is open to all IT masters and PhD students and graduates. Our purpose will be to think about the ways computer technology (esp. artificial intelligence and unbundled APIs) can be marshaled to support language learning via collaborative work on a design project spanning several semesters. What that project will be is up to the group. Some activities associated with the project may include:

- the creation of a white paper,
- adoption / cultivation / construction of a theoretical framework,
- selection of an approach to design we may want to try out,
- design work and wire framing,
- selection of a development approach we may want to try out,
- usability testing,
- evaluation with learners,
- conference presentation,
- article writing

The pace would be modest, meetings every other week -lots of thinking & conversation about design and language learning followed by eventual design, development, and evaluation.

I am currently part of a group called the Digital Spaces Working Group, over the past 16 months they have used this approach create an alpha version of an online application called Distributed Biography (found here: http://threedwriting.org/). It has

been such a great experience (one that I plan on continuing) that I thought I would see if there was interest within the IT ranks for a similar, language learning oriented endeavor.

If you are interested let me know I will contact you off-list with more information. :-)

best,

Justin

In response to that email, a group of three formed and met several times per semester over the first year. We posed different design projects and got a sense of our epistemological, ontological, and methodological perspectives and areas of overlap (Guba & Lincoln, 1998). The following year our membership grew to six, our meetings became weekly, we renamed the application from The Language & Literacy Playground to FunWritr (Olmanson et al., 2010), we presented at Brown Bag (Olmanson, Huang, Kim, & Chen, 2008) and Doctoral Seminar (Olmanson et al., 2009) events.

As stated in the founding email above, one reason for starting a new research group was to explore issues of Language Learning and Technology which, no other research group on campus seemed to be looking at. Additionally, buoyed by my work with the Digital Spaces Working Group (the group I founded in 2006 which eventually led to the creation of the Distributed Biography application (Olmanson & Greenstein, 2008; Olmanson, Greenstein, Smith, & Brewer, 2007)) I felt compelled to explore another idea I had that formed while working with an ad hoc research group on the potential for Mashups in education (Liu et al., 2008).

Meet and greet

The six of us able to go met by the ATM below Flagship University's main library. Yu-Hui, Yun Soon, Chung-Kai, Woonhee, Sung and myself walked past the university museum and to the Fuerzas parking garage. As we took the stairs to the third floor and walked out among the cars parked there, they tried to guess which of these automobiles would take us to Zapata Elementary for an initial visit with Laura O'Brian before we started our research on the creative and participatory practices in her classroom and the school computer lab.

It's the one missing a hubcap, I say.

With four people in the back seat and Sung and myself in the front, I could feel the 1999 Corolla laboring harder than it would when I made this trip alone. On the way there I pointed out the men's homeless shelter, the city cemetery, the Flagship University laboratory elementary school, and finally the school itself, just south of a set of railroad tracks which seemed to separate newly built town homes and storefronts from older single family dwellings, long empty retail space, government subsidized housing, and an iron smelting plant.

We parked on the street, North of the school. Yun Soon and a few others put their backpacks in the trunk and we walked through the open gate in the chain linked fence, down the steps, and along the path toward the front of the school.

Students were playing on the equipment, their backpacks on the ground around the edge of the swings and climbing structure.

As we turned the corner to use the intercom to request entry into the school, I saw Laura sitting with a girl on a bench off to the side of the playground equipment, the girl's feet swinging, her legs not long enough to touch the ground. Breaking off from the group I walk over and say hi. She says she can't go back in the school until all her second graders are picked up.

No problem, I'll give the rest of the group a tour of the campus and we'll meet in your room later, I say, waving Yu-Hui, Yun Soon, Chung-Kai, Woonhee, and Sung over to the bench.

That's too many, she says as they walk over.

We won't all come at the same time, no more than three at a time.

After I introduce them to her and we agree to meet in her classroom in ten or fifteen minutes, after we take a walking tour of the school.

We buzzed in and turned left, walking by the closed doors to the auditorium, past the long downward sloping hallway leading to the library and primary grade classrooms, past a flight of stairs leading to the upper grade classrooms on the second floor, turning into the office just before the fifty gallon fish tank. No need to sign in during after school hours Ms G told us. We went back the way we came and then down the sloping hallway to the library which was

dark, its doors locked, continuing on, we walked by the first grade classrooms and a couple of kindergarten and pre-kindergarten classrooms all the way to the back doors leading out onto a larger playground, amphitheatre, and playing field. We turned around the way we came, stopping every few classrooms so Yun Soon and Woonhee could take pictures of the student work taped to the walls. We walked back up past the library, through the entryway and up the stairs. Passing third, fourth, and fifth grade classrooms we peered in the 2'x2' glass window on the door to the computer lab. The room was dark, empty, and locked as well.

Hopefully this is where we'll test FunWritr later in the year, I say. We were planning on doing several weeks of general observation in Ms O'Brian's classroom as well as during her time in the computer lab followed by the introduction of FunWritr as an option for her students to use during their technology center time, during free time in the computer lab, and whenever else Laura felt our emerging application might help.

By the time we had made our way down to Laura's classroom door, located in an alcove close to the main office between the nurse's office and the copy room, Laura had finished releasing her second graders and was back in her classroom. She invited us in and we all sat on student desks which where were pushed together in groups of four in the middle of the room. She talked about her schedule and asked about our research. Chung-Kai and Yu-Hui introduced themselves as

2011/07/27 : 10:27am - 11:08am, 11:21am - 12:35pm, 1:07pm - 1:20pm, 2:10pm - 2:48pm, 2:56pm - 3:07pm, 3:22pm - 3:44pm, 3:57pm - 5:22pm,) 260 mins
2011/07/26 : 9:13am - 9:25am, 10:13am - 10:59am, 11:20am - 12:02pm, 1:20pm - 2:20pm, 3:30pm - 4:15pm, 4:46pm - 5:39pm, 8:41pm - 10:57pm, 11:00pm - 11:30pm,) 418 mins
2011/07/25 : 4:06pm - 5:06pm, 5:22pm - 6:03pm, 6:54pm - 7:27pm, 7:29pm - 7:37pm, 9:03pm - 9:14pm, 9:20pm - 10:20pm) 213 mins
2011/07/24 : 11:02am - 11:34am, 1:19pm - 1:29pm, 1:48pm - 1:52pm, 2:07pm - 2:26pm, 2:51pm - 3:21pm, 3:25pm - 3:48pm, 3:58pm - 4:20pm, 4:45pm - 5:52pm, 5:58pm - 6:01pm, 6:07pm - 6:17pm, 7:15pm - 7:59pm, 8:00pm - 8:05pm, 8:14pm - 8:25pm, 8:51pm - 9:46pm, 11:35pm - 11:42pm) 342 mins
2011/07/23 : 2:03pm - 2:54pm, 3:47pm - 5:27pm, 5:28pm - 5:30pm, 12:10am - 12:18am) 160 mins
2011/07/22 : 10:06am - 10:11am, 11:43am - 12:06pm, 2:25pm - 2:36pm, 2:38pm - 2:51pm, 4:01pm - 4:34pm, 4:44pm - 6:01pm) 162 mins
2011/07/21 : 9:11am - 9:32am, 9:45am - 10:10am, 10:29am - 11:12am, 11:21am - 11:54am, 12:06pm - 2:46pm,) 222 mins
2011/07/20 : 11:18am - 11:48am, 1:04pm - 1:28pm, 2:09pm - 3:51pm, 4:39pm - 5:29pm, 6:04pm - 6:45pm, 7:15pm - 8:02pm, 9:02pm - 9:58pm) 350 mins (org)
2011/07/19 : 9:50am - 10:24am, 10:44am - 10:47am, 4:31pm - 5:26pm, 5:36pm - 6:02pm, 7:43pm - 8:23pm, 8:39pm - 9:09pm) 188 mins (org)
2011/07/18 : 9:35am - 10:25am, 10:41am - 11:11am, 12:00pm - 12:41pm, 1:19pm - 1:40pm, 2:25pm - 3:35pm, 3:41pm - 4:24pm, 6:36pm - 7:08pm, 7:22pm - 7:54pm) 319 mins (wrtEdit)
2011/07/17 : 10:12am - 11:02am, 11:14am - 12:05pm, 4:30pm - 5:10pm, 5:49pm - 6:10pm, 6:45pm - 7:10pm, 8:58pm - 9:40pm, 10:25pm - 10:36pm) 240 mins (wrtTher)
2011/07/16 : 2:30pm - 4:10pm) 100 mins (org) 11:46am - 12:13pm, 12:23pm - 1:03pm, 10:09pm - 10:59pm) 117 mins (theory)
2011/07/15 : 9:49am - 10:20am, 10:25am - 10:33am, 11:31am - 12:13pm, 12:24pm - 12:46pm, 1:25pm - 1:29pm, 1:14pm - 2:04pm, 2:27pm - 2:36pm, 3:45pm - 3:48pm, 4:00pm - 4:32pm, 8:56pm - 9:48pm, 9:55pm - 10:02pm) 260 mins (wrtTh)
2011/07/14 : 9:41am - 10:46am, 1:05pm - 1:13pm, 1:49pm - 2:49pm, 3:34pm - 4:34pm, 4:45pm - 4:51pm,) 199 mins (wrtLN) 4:55pm - 5:05pm, 6:47pm - 7:07pm, 7:14pm - 7:16pm, 7:21pm - 7:27pm, 7:29pm - 7:59pm, 9:10pm - 9:20pm, 9:40pm - 10:06pm) 104 mins (org)
2011/07/13 : 10:18am - 10:31am, 10:37am - 11:07am, 11:50am - 12:13pm, 2:43pm - 2:49pm, 3:39pm - 3:50pm, 4:39pm - 5:00pm, 5:09pm - 5:27pm) 132 mins (wrtLN)
2011/07/12 : 10:09am - 10:54am, 11:08am - 11:32am, 11:41am - 12:42pm, 12:54pm - 1:04pm, 6:00pm - 6:33pm, 8:57pm - 9:32pm, 9:58pm - 10:38pm) 248 mins (wrtLN) 1:05pm - 1:35pm,) 30 mins (org)
2011/07/11 : 12:07pm - 12:57pm, 2:05pm - 3:56pm, 9:11pm - 9:33pm, 9:37pm - 9:42pm, 9:45pm - 9:47pm,) 190 mins (wrtLN)
2011/07/10 : 10:14am - 10:40am, 11:02am - 11:12am, 11:44am - 11:50am, 2:07pm - 2:58pm, 3:04pm - 3:37pm, 3:43pm - 4:13pm, 4:21pm - 4:41pm, 8:21pm - 8:43pm, 8:52pm - 9:02pm) 208 mins (wrtLN)
2011/07/09 : 10:35am - 11:06am, 11:47am - 12:57pm, 1:49pm - 1:51pm, 2:25pm - 3:18pm, 4:23pm - 4:24pm, 5:27pm - 6:02pm, 8:49pm - 9:04pm, 9:08pm - 9:42pm, 10:05pm - 10:28) 264 mins (wrtLN)
2011/07/08 : 9:30am - 10:21am, 10:30am - 10:35am, 11:05am - 11:35am, 11:45am - 2:15pm,) 176 mins (wrtLN)
2011/07/07 : 4:18pm - 5:08pm, 5:17pm - 5:18pm, 7:04pm - 7:46pm, 7:55pm - 8:05pm, 8:17pm - 9:11pm, 9:32pm - 9:56pm) 181 mins
2011/07/06 : 9:10am - 9:31am, 9:48am - 11:00am, 11:30am - 11:41am, 11:44am - 11:52pm, 12:40pm - 12:43pm, 1:21pm - 1:33pm, 1:38pm - 1:45pm, 2:34pm - 2:44pm, 3:52pm - 4:02pm, 4:05pm - 4:23pm, 4:33pm -) 172 mins (wrtResTheory)
2011/07/05 : 9:53am - 10:16am, 10:18am - 10:56am,) 61 mins (wrtLN) 2:32pm - 3:16pm, 3:21pm - 3:47pm, 7:04pm - 7:15pm, 8:01pm - 8:21pm, 8:23pm - 8:34pm,) 112 mins (org) 5:08pm - 5:18pm, 8:34pm - 8:51pm, 9:02pm - 9:39pm) 64 mins (wrtTh)
2011/07/04 : 9:34am - 9:54am, 10:09am - 10:32am, 11:34am - 12:04pm, 12:08pm - 12:58pm, 1:46pm - 1:56pm, 3:33pm - 3:38pm, 3:49pm - 4:23pm, 4:35pm - 5:13pm, 5:20pm - 5:29pm, 8:18pm - 8:41pm, 10:31pm - 10:41pm) 262 mins
2011/07/03 : 11:48am - 12:38pm, 12:53pm - 1:24pm, 1:45pm - 2:09pm, 2:23pm - 2:48, 3:17pm - 3:47pm, 9:59pm - 10:49) 210 mins (wrtLN) 3:55pm - 3:58pm, 8:02pm - 8:42pm) 43 mins (org)
2011/07/02 : 12:02pm - 12:13pm, 3:43pm - 3:53pm, 4:22pm - 4:42pm, 5:08pm - 5:40pm, 6:00pm - 6:48pm, 7:03pm - 7:47pm, 7:53pm - 7:57pm, 7:59pm - 8:14pm, 8:16pm - 8:17pm, 9:52pm - 10:22pm, 10:25pm - 10:42pm,) 271 mins

Figure 28: Logged moments of writing.

Marty and Richard. I added that they were both English teachers in Taiwan before coming to Flagship University to work on their PhD and Master's degrees in Instructional Technology respectively. Yun Soon, Woonhee, and Sung introduce themselves as Rosa, Woonhee, and James.

Rosa and Woonhee both worked in schools in South Korea, I say, *they're getting their master's in Instructional Technology, and James is getting his undergrad in computer science*.

The room was smaller than some of the other classrooms I had been in at Zapata. Hand-made and laser printed posters of the writing process and reading strategies covered most of the open space on the walls. Additional literacy-related posters hung from string that crisscrossed the room.

We offered to help her if there was anything she thought we could do to help in terms of technology or anything else, she mentioned having a LCD projector that needed a replacement bulb installed, we said that we'd get right on it when we came the following week.

She showed us her leveled readers, the basal reader the second grade used, and other supplemental literacy resources. She agreed to email us a copy of her class schedule if we would remind her.

We thanked her, snapped a picture next to the administrative and instructional support staff welcome bulletin board outside the office, and walked

back up the hill, piling into the Corolla for the return trip to the university in hopes of arriving before the start of Yu-Hui and Yun Soon's four o'clock class.

Well, what did you think? I said as we pulled away.

A nice fit several of them said, a school focused on language arts and literacy with a teacher doubly focused on the same with an interest in using technology to do it.

We made it back to campus a few minutes before four, I dropped them off as close as I could to the education building, agreeing that those interested in observing in Laura's class would meet near the parking garage once a week in the morning and carpool over to the school.

I'll email Rosa and let her know the plan, I say watching her run up the hill in front of the education building.

Raw Interview Transcript

Justin: *There are our recorders, and what we do with the is record whatever you say. That way we make sure we get exactly what you said. Is it okay if we use them?*

Brianna: (Nods)

Justin: *Okay, when I push record on mine, see how those bars go up and down? That Tells us it's recording. Mr. S and I are going to ask you some questions. And Mr. S is going to ask most of the questions, and then I might just in or he might ask me if I have any for you okay? Just answer as best you can and talk as much as possible.*

Rob: *Okay, First couple of questions I am going to ask you is about creativity. Um, you heard of creativity, you have heard of people being creative and stuff like that? So, I want to you first ask you when you had to create something?*

Brianna: *In art.*

Rob: *In art? Is there anything else that you have created besides in art?*

Briana: *No.*

Rob: *Okay well what have you done in art that is creative?*

Briana: *Make Valentine's hearts and... (okay, keep going) And pictures...*

Rob: *Okay, you draw them. What about, um, think about a time that you had to solve a problem. And it doesn't have to be a math problem, jus tsome problem that you had to solve? Can you think of a time that you did that?*

Briana: *No.*

Rob: *No? Ever had to think how to find a solution to something? When have you tried to find a solution to something?*

Briana: *A shoe? (What?) A shoe? (I don't understand)*

Justin: *What problem did you have?*

Briana: *I couldn't find it.*

Justin: *You couldn't find a shoe? Okay, you were getting ready for school or something? So tell us what happened.*

Briana: *When I woke up, I couldn't find my shoe. And it was in my brother's bucket. And he was looking in his bucket, and he said he found my shoe.*

Justin: *So did you ask everyone questions to find your shoe? (yeah.)*

Rob: *Okay, have you ever taken something and added to it? (No.) Think back to if somebody had a picture or writing or some kind of story-- have you ever added to anybody's story?*

Briana: *Yeah.*

Rob: *Okay, When did you do that?*

Briana: *Um, yesterday.*

Rob: *Oh you did it yesterday. Who's story was it? Was it another students, or...?*

Briana: *It was mine.*

Rob: *It was yours? Okay. So you already had it, and you changed it. What did you do to change it?*

Briana: *I fixed some words (yeah) to make more sense.*

Rob: *Okay, that's good. How did you know that you wanted to change it?*

Briana: *Because some words didn't make sense, and some did.*

Rob: *Did you-- you reread it, and figured it out yourself? Or did you have help with anybody? Did somebody else read it?*

Briana: *Somebody else read it to me, then they said that it didn't make sense.*

Rob: *Okay, good, good. When you're at home, what do you do that is creative at home?*

Briana: *A picture.*

Rob: *You do pictures at home? Do you ever write at home?*

Briana: *Yeah.*

Rob: *What type of writing do you do?*

Briana: *Homework.*

Rob: *Just homework? Do you do anything that isn't homework? (No.) Okay, that's fine. Now when you write, what do you write about?*

Briana: *Words.*

Rob: *Okay, what about the topic or subject that you write about. Think about the last couple of things that you wrote about in class or for homework.*

Briana: *Words.*

Rob: *Words, okay.*

Justin: *What does writing mean to you? What does it mean to write. (I don't know) You don't know? When the teacher says to write a story, what do you have to do?*

Briana: *Write about a story that has good details.*

Justin: *Oh, good details. So that is what makes a good story?*

Briana: *Yeah.*

Rob: *So where do you come up with your ideas?*

Briana: *From my grandma.*

Rob: *Your grandma gives you ideas?*

Justin: *We heard that you guys have a journal, and you write ideas in the front. And when you write a story, you take one of those ideas and you start writing about it. Is that how you do it?*

Briana: *Mmhm.*

Justin: *How does your grandma help?*

Briana: *She helps by...*

Justin and Rob: *It's okay if you can't think of anything.*

Rob: *What types of things do you for fun?*

Briana: *Play.*

Rob: *Okay, what types of things do you play? (...) Do you play games? Do you play with other people?*

Briana: *Play with other people.*

Rob: *You play with other people. Do you ever write about any of that? Like what you do with other people?*

Briana: *Yeha.*

Rob: *Okay, can you think of something, when you did that was it a story that you wrote?*

Briana: *A story.*

Rob: *You wrote a story? Okay, tell me about a project that you did with some one else, whether it was another student or family memeber or a teacher?*

Briana: *My brother.*

Rob: *You did something with your brother? Okay, and what did you two do together?*

Briana: *Make a volcano. (What was that?) Made a volcano.*

Rob: *You made a volcano? Wow! What did you make a volcano for?*

Briana: *Made it for something fun.*

Rob: *Okay, was it...Is your brother older?*

Briana: *Older.*

Rob: *Okay, was it something for school?*

Briana: *No.*

Rob: *Oh you just did it for fun.*

Justin: *Did it explode? Did it erupt?*

Briana: *Yeah.*

Justin: *Did it shoot up high? (Yeah) Was it a mess to clean up afterward?*

Briana: *Yeah.*

Justin: *Did anyone get in trouble? (No) Oh, so you were able to clean it up? What took longer, making it or cleaning it up?*

Briana: *Cleaning it up.*

Justin: *But it was fun, right?*

Briana: *Yeah.*

Rob: *Sounds cool. When you are writing, what do you like about writing? (...) Just anything. Do you like writing? (Yeah) What do you like about it?*

Briana: *Um, solutions.*

Rob: *Okay, um. Do you always like writing? (yeah). You never dislike it? Are there ever times that you dislike it? (No.)*

Justin: *So you're totally thumbs up about writing? Everytime you are writing, you are smiling.*

Briana: *Yeah.*

Justin: *Alright, good! So you are probably a good writier. (Yeah) So what makes you a good writer?*

Briana: *Um...*

Justin: *Before you said, you fixed words and stuff. So I guess there are a lot of things that could make you a good writer. Do people like to read your stories? (Yeah)*

Briana: *My problems. (What about your problems?) My math problems.*

Justin: *Oh, you're good at writing math problems? That's right, you guys have to do a lot of writing-- explaining how you got your answer and that sort of thing. (yeah). Oh...So you do your writer's workshop, and you do your math problems. That's two different types of writing you do at school. Do you do writing at home? What kind of writing do you do at home?*

Briana: *Homework.*

Justin: *You do homework, so you ever write any lists? (Yeah.) What kind of lists?*

Briana: *Christmas lists...*

Rob: *Um... Do you ever have problems writing? IS it ever difficult to you? (Yeah) What do you find that is difficult in the steps of writing? (...) Like, do you ever get stuck writing? (Yeah) Okay, you do? How do you get unstuck?*

Briana: *Like if i get confused (Okay, keep going) Like if somebody says something out loud. Like it confuses with the story because, like if you have something good to write down, you can write it, but if somebody confuses you.*

…

> *What makes actions repeatable are regularizing networks of forces - repeated these become what Foucault calls 'power'.* (Roy, 2003, p. 45)

Introduction

Through this working draft, we, the members of the language learning and technology research and design group, seek to address the call of Greenhow, Robelia, & Hughes (2009) for inquiry into how emerging technologies can and do impact the creative and participatory practices of learners. By using data from our initial efforts to understand classroom technology use during language arts, literacy, and ESL activities in a second grade hybrid ESL/regular classroom , our goals are to gain insight into the classroom practices before us, follow lines of inquiry posed by our field, and gain understandings which we could apply to the ongoing process of application design. The qualitative, ethnographic spirit of our inquiry supports our interest in observing a broad range of classroom practices. By looking to better understand forms of the ethnographic question: '*What's going on?*' (Wolcott, 2008) or '*How will things unfold?*' (Thorp, 2005) we feel better equipped to identify, navigate, and analyze some of the larger issues at the intersection between technology and literacy within a particular primary school classroom. This methodological approach is a partial response to those in the field who have encouraged a more holistic and expansive orientation toward research in education and technology (Zhao et al., 2002). Ethnographic methods allow us to ask, '*what's going*

on' first as a way to contribute to the field at large and second, as a way to inform our emerging technology design and development efforts (Barab et al., 2004).

Study Location and Methodology

The context and research site for this project is a 2nd grade, self-contained, classroom on the campus of Zapata (pseudonym) Elementary and its 19 students. The school, which serves more than 400 students, is located one mile east of a major interstate and less than 3 miles from city center. The neighborhood around the school is a mix of houses, apartment complexes, repair shops and brick buildings –many of which have bars on the windows. The words 'for lease', 'se vende', and 'for sale' are written in black spray paint on some of the street-facing walls of the nearby retail spaces. A 35,000 square foot iron and alloy foundry is located within 50 meters of the school emitting a fine mist of acrid, metallic particulate.

Over a period of 16 months, we have spent better than 80 hours in *participant* observation (K. M. DeWalt & B. R. DeWalt, 2002; Spradley, 1980). In order to better understand the creative and participatory practices present in the various aforementioned settings, we went beyond detached observation (Spradley, 1980) to a more participatory or involved form of inquiry (Vasudevan, 2006) into the changing, nuanced literate landscapes of the classroom. To that end we interacted with the students and Laura, the classroom teacher. We made comments, made copies, and made ourselves scarce during testing. We reshelved books in the library, asked questions, helped struggling students with their writing, tried, unsuccessfully, to replace the bulb in an old Acer LCD projector, and *ohhed* and *ahhed* at their new innovation stations. We also spent time engaged in

informal questioning and semi-scripted interviews (Weiss, 1994; Wolcott, 2005), and artifact collection (LeCompte & Preissle, 1993). We observed computer lab activities, language arts instruction, test preparation, center time, and homework reviews. Each of us kept and shared field journals wherein we kept jottings (Emerson, 1995) which we turned into expanded fieldnotes and analyzed together.

In terms of data analysis, we met every Wednesday afternoon over the course of two semesters to discuss research issues and immerse ourselves in the data. We followed an iterative analysis (Anfara et al., 2002) beginning with an initial individual coding followed by group chunking and theming leading to theory development based on a constant comparative analysis of events and interactions (Strauss & Corbin, 1998).

The analysis to date, located in the following section, was derived from chunking over 180 base codes which came out of fieldnotes written by multiple members of our group observing the same classroom events. Student interview transcripts and notes from informal conversations with students and their teachers were also coded.

Initial Study Findings

Computer use itself was heavily scripted. While the computer center was the least scripted of the center activities in our participating teacher's classroom, student choice was limited to a handful of websites, all of which placed their own limits on student activities and student opportunity was also limited to class-assigned lab times. Furthermore, events often precluded the class from making use of their assigned computer lab time.

Student responses in interviews tended to frame creativity as something that happened in art class, was associated with drawing pictures, or making things with older siblings. Over time interacting with the researchers, some came to view writing as a creative activity but few saw typing on a computer as writing. The compositional act, from their perspective, happened before being given access to a computer to *type up* their writing. For many of them, writing and being a good writer involved reflection, good penmanship, fitting illustrations, good length in comparison to their peers, details, and plenty of time. Along with spelling, our six participants, reported aural interruptions as a primary obstacle to writing. In exchange for the struggles inherent in writing they were able to write whatever they wanted to, a level of autonomy they appreciated and, based on our observations, were not given in other subject areas. They understood the writing process as one of having ideas, choosing one, and then writing a story based on that idea from beginning to end. Though they described writing letters, journal entries, non-fiction reports, and stories, types of writing were differentiated by topic.

While computer programs with a text-to-speech function made reading on the computer easier, using the computer to type, students told us, was harder than writing by hand as it was sometimes difficult to maintain the status and location of: the appropriate letter on the keyboard, the cursor, and the corresponding place on the handwritten page that accompanied them to the computer lab.

Access to technologies capable of supporting creative and participatory literacy practices were, for our participants, lacking, as they explained, their parents and older siblings were allowed to use to computer to do work or typing for homework but they

were not old enough, not yet trusted, or not given homework requiring typed assignments.

FunWritr Demo #54

Justin*: You are right…this is the tricky part*

Laura*: okay…oh we can totally take care of that, don't worry about it*

Justin*: okay*

Laura*: so does it matter if it is safari or firefox?*

Justin*: I…hope not. maybe firefox is used the most*

Laura*: okay*

Justin*: Yeah*

Silence…

Laura*: Okay! Eyes on Mrs. O'Brian, do you need me to start giving instructions now?*

Justin*: ummmm….well when we find the*

Laura*: okay the url*

Laura*: okay so tell me*

Justin*: ummm*

Laura*: Do you want me to let you take over?*

Justin*: mmmm ???*

Laura*: Okay okay maybe it can be both of us.*

Justin*: yeah*

Laura*: you do what you got to do*

Silence….6 seconds

Laura*: oh no no no…I knew what you were doing*

Laura*: the next two days it is always*

Justin*: yeah*

Student*: today is…*

Laura*: is anyone bringing anything for the party besides Erin because…that's not a very fun party*

Student*: I think my grandma might*

Teacher*: You think? What do you think she might bring? You don't know? Does anybody know about anything that is being brought to the party? Your mom was here earlier.*

What?

Student*: Is it today or tomorrow?*

Laura*: it is today but I sent that note home…saying the party was today.*

Thumping

Laura*: Right?*

Laura*: I mean it isn't that end of the world, I mean the cookies are good*

Laura*: That's awesome yeah um I, I mean yeah it is not fair that Laura is the only one that brought something.*

Laura*: And the thing that is really bad is like… so I don't know if anyone else is bringing anything, we just have to sit and wait.*

Sigh

Laura*: So this is it?*

Justin*: Yeah*

Laura*: Okay this is going to be…this is going to be hard here FunWritr*

Students as a group*: FunWritr*

(pronouncing the word)

Laura*: So they couldn't do funwriter dot.com*

Justin*: Well yeah they can (unsure)*

Laura*: but it is going to be more steps*

Justin*: yeah*

Students*: Funwriter (pronouncing)*

Teacher*: I think*

Justin*: this is the first time*

Laura*: SHHHH*

Justin*: Remember those other people that came sometimes to visit your classroom*

Student*: That was you*

Justin*: That was me…without the facial hair*

Justin*: and so what we did is …we watched what you did in the classroom and we thought about what sort of computer programs might be useful. Something that would be fun…but you know Ms O'Brian, she likes working with words and reading and computers*

Student*: (interrupts) and technology*

```
def recursive_phrase_process(phraseListElement):
        """This recursive function takes a list of phrases that are embedded in eachother and
          separates them out while duplicating them ['the', ['big']] becomes [['the', 'big'], ['big']]
        """
        logEnter()
        p = []      #list of lists
        pp = list(flatten(phraseListElement))    #make the list flat
        ppp = scrub_list(pp)            #take out post 0-eth position phrasal tags
        p.append(ppp)       #add the scrubbed  list to the list
        for element in phraseListElement:       #process each chunk with a for loop
                if isinstance(element, list):    #check if element is a list
                        p.append(recursive_phrase_process(element))     #run on sub-lists
        #print '-----recursive_phrase_process function-----'
        #print 'passed phraseListElement: ', phraseListElement
        #print 'pp, flattened list: ', pp
        #print 'Return Value:', p
        logExit()
        return p

def scrub_list(flattened_list):
        """this function scrubs out all string elements that don't contain a '/' in them
        """
        logEnter()
        s = []      #empty list
        w = ['NP', 'VP', 'PP', 'CL', 'OR', 'S']
        for element in flattened_list:
                if isinstance(element, basestring):       #check to see if element is a string (either unicode or
bytestring)
                        if len(s) < 1:          #if the list has no phrasal designation then set it
                                s.append(element)
                        elif element not in w:          #check to see if the element is not a phrase tag and
therefore a word/POS couplet
                                s.append(element)
        #print '-----scrub_list function-----'
        #print 'flattened_list:', flattened_list
        #print 'w clause list:', w
        #print 'Return Value:', s
        logExit()
        return s

def flatten(l, ltypes=(list, tuple)):
        """
        this function taken from http://code.activestate.com/recipes/363051/
        """
        logEnter()
        ltype = type(l)
        l = list(l)
        i = 0
        while i < len(l):
                while isinstance(l[i], ltypes):
                        if not l[i]:
                                l.pop(i)
                                i -= 1
                                break
                        else:
                                l[i:i + 1] = l[i]
                i += 1
        logExit()
        return ltype(l)
```

Figure 29: Code snippet from the FunWritr application.

Justin*: and technology and combining the fun with the writing and so what we did is we came up with a program that when you type words, pictures show up with the words*

Student*: cool*

Students*: coooool (at different times)*

Justin*: so you can type things like … a zebra and then zebra should show up and then if you went back and put a fast zebra, you should see pictures of fast zebras…or angry zebras*

Teacher*: awww*

Designing and developing FunWritr

> We learn nothing from those who say, 'Do as I do'. Our only teachers are those who tell us to 'do with me', and are able to emit signs to be developed in heterogeneity rather than propose gestures for us to reproduce. (Deleuze, 1994, p. 23)

> Educational technology ... can be traced back to the time when tribal priests systematized bodies of knowledge and early cultures invented pictographs or sign writing to record and transmit information. (Saettler, 2000, p. 4)

> Curriculum can be seen to be the embodied intensities that develop when things close to the students are allowed to occur. (Roy, 2003, p. 89)

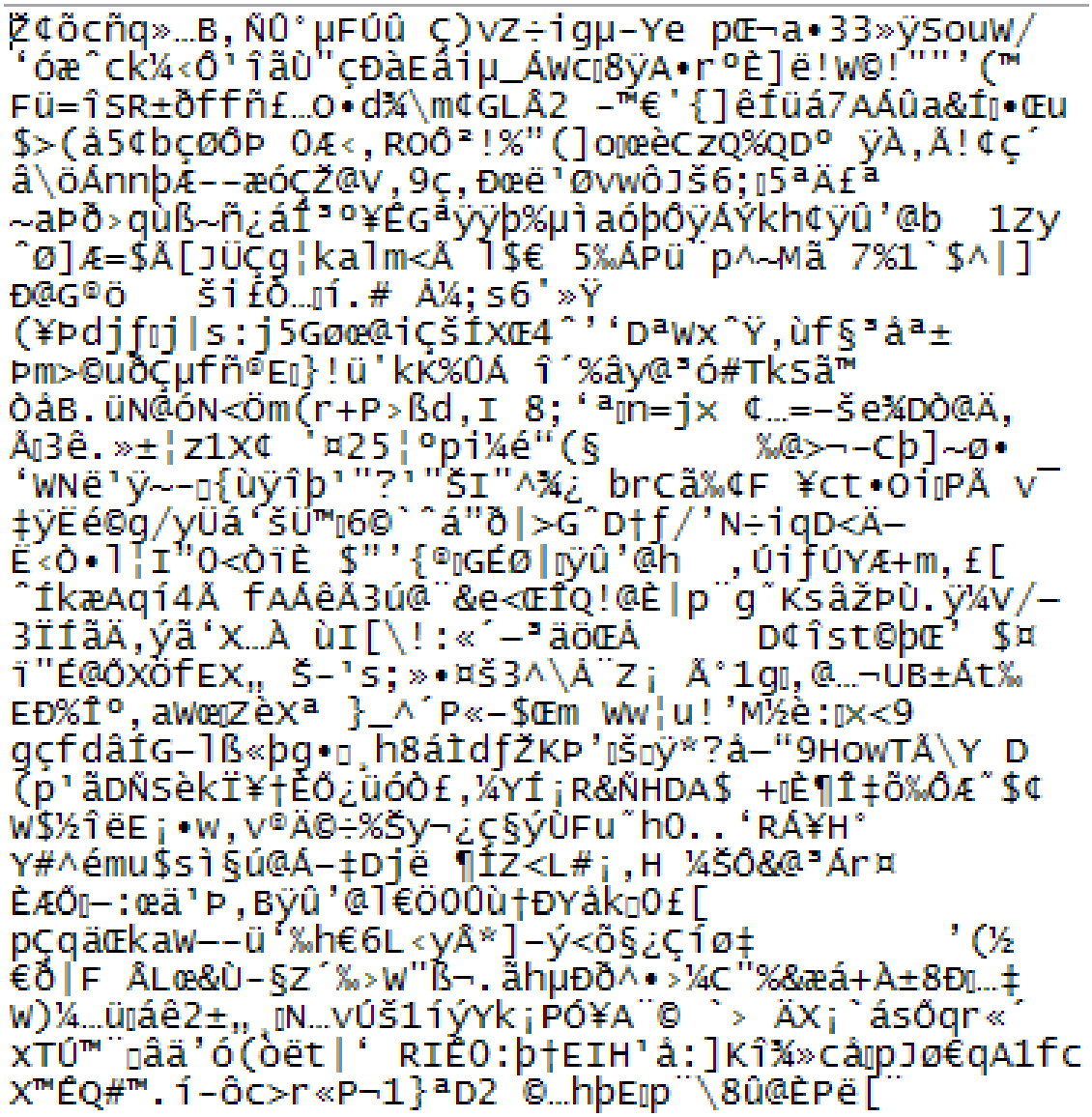

Figure 30: Raw MP3 interview data.

In this segment I describe the FunWritr project, a literacy development and language acquisition application design, development, and research project that uses an online multimodal environment wherein students explore the English language through writing. An educational mashup, FunWritr couples artificial intelligence and natural language processing tools with multimodal third party content to support open-ended narrative, semantic, and syntactic experimentation. It affords participating students at a local elementary school the chance to write stories, build vocabulary, notice syntactic aspects of language, and navigate word meanings and word sense families. My efforts, hereafter referred to in this chapter as 'our efforts' so as to recognize the ways in which this was very much a group endeavor, are borne out of processes which forefront collaborative, deliberative, ethnographic design principles carried out by a student-led research and design group. Working at the intersection of literacy development, public schooling, youth culture, and curriculum theory, we have cobbled together an approach to instructional design and technology development that supports the efforts of affinity-based groups of designers working at a sustainable pace while relying only on the resources of the group. The resultant generative research and development experiences have led to insights into the creative and participatory design practices in educational technology. These insights have come in part through a study of literacy practices of students in one local elementary school classroom and in part via application design experiences meant to create an application that supports learners in open-ended language play, and educators in teaching the state-mandated language arts curriculum in more evocative, heterogeneous ways.

Introduction

Youth today are awash in the consumption and creation of media. There have never been more freely available stores of content, shared artifacts, and interactive applications. Heavily used social networking, media sharing, podcasts, photo sharing, audio, and video sites all have vast content repositories often categorized or tagged by users as well as content providers. Such meta-data rich content enables flexible types of search and potentially complex interconnections between content. Many of these sites also offer Application Programming Interfaces [APIs] which allow for searching, presentation, and content repurposing by third-party applications.

Despite this rising sea of opportunities and resources, heterogeneity is often positioned as the hobgoblin of educational progress instead of its ally. The efforts within educational systems and institutions to frame and approach curricular problems with pedagogical solutions, the use of step-wise or monolithic mandates at the national and state levels (standards, and assessments), local and campus levels (programs and resources), classroom and subject areas (standards, applications, delivery, usually one path through the content), and even the search for best practices imply a bell-curve-chasing orientation to education. Surrounded, even drowning in new media content and technologies that hold the potential to transform learning as we know it, interventions that are documented to work with third grade students, fourth grade boys, second grade girls, African American students, Latino students, gifted and talented students, slow readers, low readers, non-readers still operate within the curricular boundaries set by national and state standards.

At a time when there's never been more freely available easily searchable content; realizing the transformational potential new media offers within school environments poses at least one historic and one culture-of-schooling issue. Historically, most new media environments constructed for classroom use begin their design trajectory with a focus on how pre-established content is delivered. While pedagogy is an important element, such an orientation constrains the depth, and breadth of the curricular experience. In terms of the culture of schooling, the use of dynamic content pits the desire to robustly support learners against the need to shield them from the specter of inappropriate material.

Observations in elementary school classrooms and computer labs lead us to acknowledge that for some, the dynamic, shifting nature of third-party-created content used in open-ended ways posses too great a threat to maintaining a focus on student attainment of measurable objectives in a way that does not risk breaching appropriate in-school decorum.

It is our hope that the time may come when a tipping point is reached wherein teachers, administrators, and parents begin to feel that the risk of not exposing their charges to the positive aspects of open-ended, dynamic, user-guided environments will outweigh the risk of spending school time engaged in practices whose benefits are difficult to measure and whose side effects may include occasional exposure to inappropriate content. Within social contexts of expression, openness, and sharing, technological contexts of nearly limitless content, multiple tools and ways to display and arrange that content in real time, and schooling contexts of standard centricity, expanding

fields of information, heavy reliance on text for assessment, and pressure to communicate via text, –tools and environments designed not out of an interest in reaching established goals with greater frequency or fidelity but out of an ethic of curricular as well as pedagogical experimentation are at a point where even a handful of graduate and undergraduate students working on borrowed time have, as evidenced by the FunWritr application, might be realized.

Theoretical Framework

In working together to conduct research, realize our designs, and serve young learners and writers, we draw upon the work of a rhizome of thinkers, theoreticians, practitioners, and visionaries. From post structural theory to theories of user interface design, from curriculum theory to new literacies, and from theories of second language acquisition to agile programming we are working to weave together a network of ideas about learning, language, experience, and application development in a way that informs our processes, facilitates the design of our application, and sets us upon an resonant research trajectory. From Deleuze (1983), Derrida (1982) and Roy (2003) to Chappell (2003) and Gee (2005b, 2007), from ADDIE (Molenda, Pershing, & Reigeluth, 1996) to Agile Software Development (Steinberg & Palmer, 2004; Stober & Hansmann, 2009) our notions of learning, curriculum, design, and technology are influenced by heterogeneity and democratized decision making.

Drawing from Vygotsky, Lave [1996] and Lave and Wenger [1991] outline the construct of situated cognition wherein knowing and understanding are not exclusively psychological constructs but are also distributed within and across artifacts, tools, social

interactions, and contexts. Additionally, for Lave and Wenger, coming to understand is about being able to gradually participate more centrally in practices deemed important.

FunWritr was designed as an environment wherein individuals and small groups are supported by a range of tools which allow young and intermediate English Language Users to change both their avenues for language exploration and alter participation patterns in terms of writing. Each feature or embedded tool displays the syntactic and semantic interrelatedness of the text they enter or click on. By making this information accessible to the user we seek to alter their participatory capacity as well as the range of entry points to participation.

A constructivist orientation to literacy development (Au, 1998) focuses on improving attitudes about literacy, sees the home language/discourse as an avenue for dominant language/discourse, making the experiences more authentic. Constructivist activities offer more student control, are inclusive of family and community, and embed skill instruction and assessment opportunities within authentic activities. Our design attempts to create an environment wherein students use the words they know, words that are important to them to shape their experience.

Over the past decade, researchers in the fields of second language acquisition (Firth & Wagner, 1997; Swain & Deters, 2007), sociolinguistics, and language & literacy (Gee, 2007; New London Group, 1996) have argued that language use and acquisition is a shifting, contingent, open-ended, active process, a negotiation of meaning between individuals situated within complex, active, multimodal, contexts. This perspective of language in general (Derrida, 1997) and writing in specific (Ulmer, 1985) has until the

advent of the open content repositories described above been difficult to make experientially real in an accessible way to young and growing language users.

In his essay Différance, Jacques Derrida (1982) posits that the meaning of a text and the words which make it up are influenced by a number of heterogeneous language dynamics. Included in these dynamics are the way words derive much of their meaning via ontological difference in comparison to other words, in effect, from the orientation and distance between a word and its ontological kin. Additionally, further chipping away at the sign-signifier construct which is often seen as the core of meaning making, Derrida also offers the dynamic of deferral whereby word meaning is continually reshaped by subsequent writing. In our design efforts on the lexical level we worked to create an environment that visually juxtaposed the word of focus chosen by the user with its ontological siblings, while on a phrasal level constantly updating and changing the visual field based on subtle alterations in word choice and syntax, positioning the signifier-sign relationship as part of the shifting sands of meaning.

Doll (1993) discusses the need for a departure from a linear, step-wise curriculum, while Pinar (Pinar, 2006) describes how the current parameters of what can be learned are bounded by what one has time to study which is usually the provenance of the school. Furthermore, Deluzian notions of the curriculum see the study, experience, and reflection on interacting in a dynamic and fluctuating world as the point of curriculum (Roy, 2003). By drawing on these ideas in our design, we worked to create an environment supportive of user-directed language study that could be both serendipitous as well as focused within

a constantly shifting world of sign generation as much for its own sake as for some external goal.

Agile software development (Steinberg & Palmer, 2004; Stober & Hansmann, 2009) allows design, development, and testing to occur continually as the project progresses. A list of features that support design aspirations in the externalized form of use cases are created and given estimates in terms of development time. Group members then decide which features to develop next, usually in one to two week increments and always with the goal of generating a usable application by the end of each iteration. This process allowed our development to change as our designs shifted due to observed and reported target environment usage patterns while also giving all participating members an opportunity to remain active in the ongoing design and development efforts.

Finally, over its history, models of instructional systems design have gone by many names. The ADDIE model itself (Molenda et al., 1996) is one which knows no originator but rather grew out of an tradition of collaboration and refinement (Molenda, 2003). As part of our early design process we drew from different systems design models including ADDIE.

Design Parameters

We had four overarching goals for our endeavor. We wanted to facilitate positive, creative, participatory experiences with writing that make language creation and exploration fun while exploring the potential of intelligent mashups in education. We wanted to experiment with and chronicle a viable, sustainable, tertiary design process that could move forward with minimal resources and in a way while allowing ongoing

deliberation. We wanted to experiment with what was possible drawing on notions of the reconceptualized curriculum, post-structuralism, and new literacies in a way that was not wholly incongruent with classroom realities we observed. We wanted our application to act as a potential bridge capable of affording its users the opportunity to sidestep, if only temporarily, the Tylerian (1949) and high stakes testing pressures of schooling while being readily identifiable to teachers and administrators as valuable enough to merit use within the school day.

Group Level Design and Research Methods

While we were disciples of no single instructional systems design approach, we drew from many sources within and beyond the canon including ADDIE, design-based research (Collins et al., 2004), critical design ethnography (Barab et al., 2004), and affinity-based learning and design. While all design processes have the potential to involve moments of insight and growth for those implementing them, our design process was both generative in terms of: the technology created –as most members of the group contributed to the design iterations and joined the group for that express purpose; the design approach we navigated in that the process shifted as new members with different interests and expertise joined the group and the project went through different phases; the performances of understanding/development (Wiske, 1998) approach –as we leveraged different opportunities to present and receive formal feedback on our design, and development process; and the research process in that we built consensus as to what we would study, how we would study it, and collectively come to interpretive conclusions as to what our data might mean.

The Application

For the past two years we have been collaborating with a second grade teacher at a title I urban public elementary school. During the first year and a half we worked to understand the range of literacy and language practices circulating in the classroom and at the campus. Six months ago we demoed FunWritr in the school's computer lab to gauge student and teacher reaction to an alpha version of the application.

Over the past two months, several second graders tried out the application in a computer lab setting. The participating students used FunWritr in lieu of their normal center time. They have used it to make up stories, to see pictures of their favorite animals, and to experiment with vocabulary words.

Technologically, FunWritr (Olmanson et al., 2010) is an intelligent mashup, an online application that uses artificial intelligence and computational linguistics tools to repurpose existing user-created content from online repositories in support of language exploration and literacy development.

Mashups are web-based applications that use programming interfaces [APIs] to aggregate other online multimedia sources. Via APIs, a mashup can request images, video, audio, text, and other web-accessible, media or services. The requested content is then configured and delivered to the user in a way that is uniquely supportive of their anticipated needs. For example Journamatic (Trancealot Technologies, n.d.) creates an automated, interactive calendar of social media events using the Facebook, Twitter, FourSquare, Glue and other APIs. An additional example is the Twikipedia (Möller &

Kollak, n.d.) mashup which combines community ranked descriptive tweets about a topic with its Wikipedia information via the Wikipedia and Twik.it APIs.

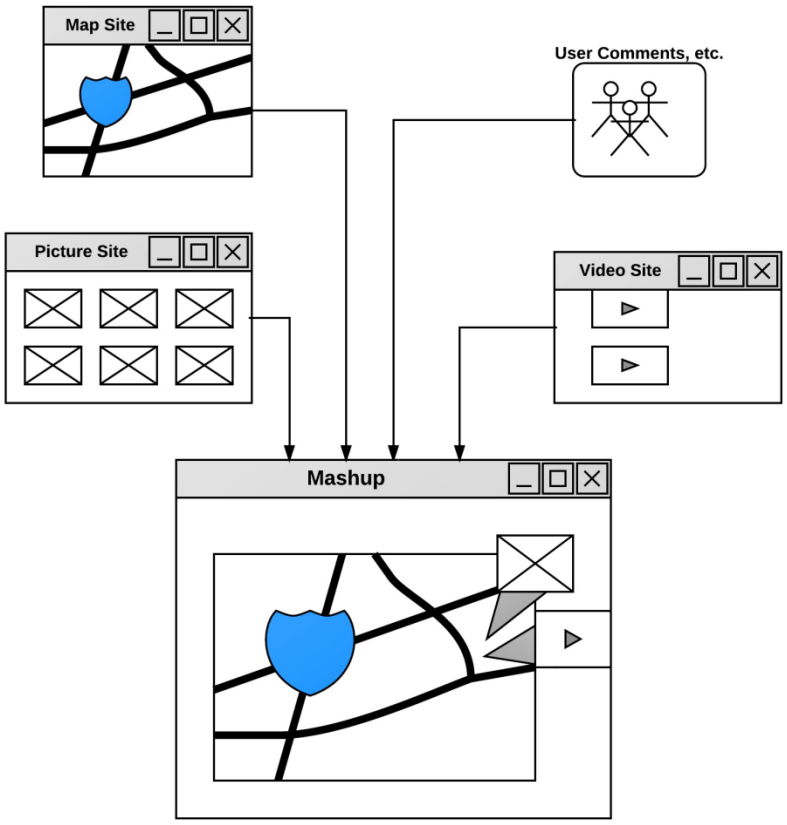

Figure 31: Outline of mashup functionality.

Up until the emergence of Web 2.0 and the APIs released by each application's creators, educational use of mashed-up applications (Liu et al., 2008) was merely hypothetical. Since their emergence, their use and number has proliferated. At last count the Programmable Web (Musser, n.d.), a clearing house for APIs and mashups, listed

over 3000 available APIs and over 5000 mashups. Yet, while access to such a range of content repositories and tools make an incredible number of different configurations possible, very few have been created for explicit learning purposes. A survey of available mashups as of the writing of this manuscript reveals 91 mashups categorized as pertaining to education and 13 related to learning. Filtering out college selection, and K-12 school ranking mashups leaves a list of less than 18 different applications expressly created to support student learning and exploration. One example of these sites is AlphaLearnr (harikrish, n.d.). It uses 260 images (10 per letter) from a photo sharing site and audio pronunciation files (one per letter) from an audio file sharing site to support young learners in their efforts to learn the English alphabet.

Like AlphaLearnr, FunWritr requests images and audio via APIs, however instead of predefining the scope of content it allows open-ended user input interpreted and organized via computational linguistics tools. Based on this interpretation, images and audio are requested and displayed based on additional user interaction. Figure 32 illustrates the assemblage of technologies and APIs which make FunWritr's feature set possible.

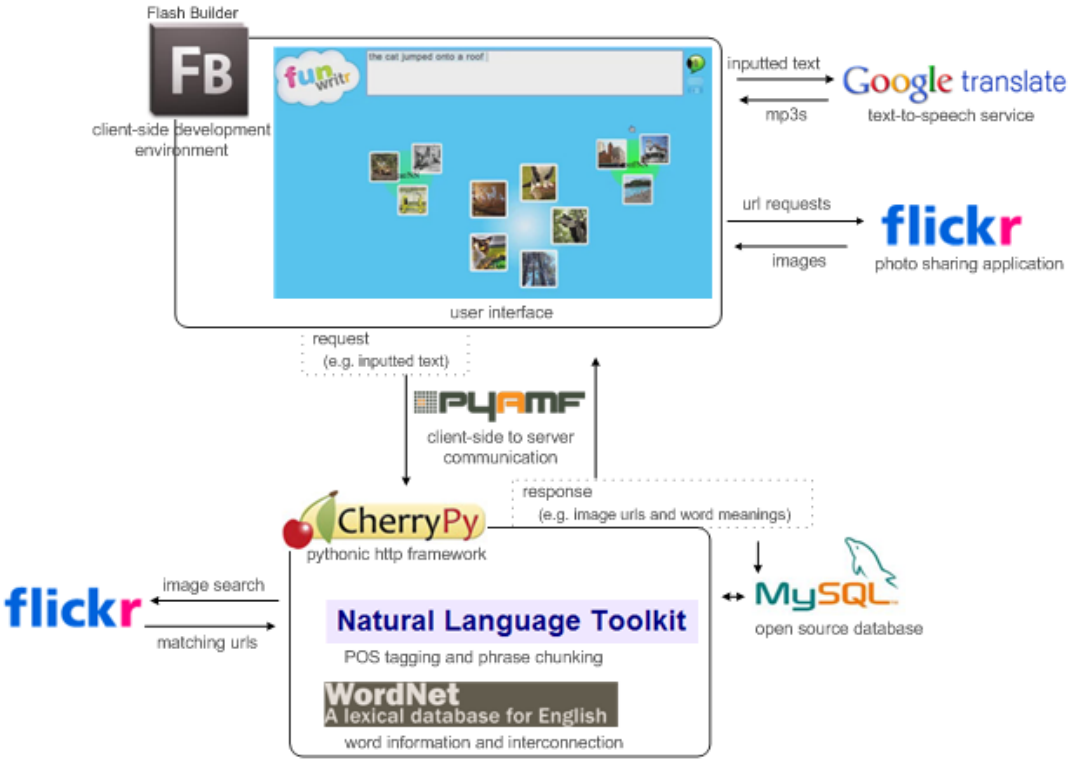

Figure 32: Assemblage of technologies and APIs used in FunWritr.

While mashups like AlphaLearnr can be realized with just a few dozen lines of code, the level of processing to support and enhance the experience of writing required us to design and develop a more involved system with a fairly complex front and back end.

The application's client-side functionality and user interface were developed using free, student versions of Adobe Flash Builder. The resultant swf application ingests user input in the form of words and sentences. At particular intervals requests are made to, and responses received from the server via the PyAMF open source client-server communication protocol. Based on the received responses, images are requested via the

Flickr API and arranged with information on the phrasal and lexical levels. The resultant multimodal support for the entered writing is loaded, organized, and displayed based on user interaction.

On the server-side, incoming requests initiate database queries to ensure the request has not been made and processed in the past. New requests are tagged with part of speech, grammar chunking, word disambiguation, definition, and interconnection generation information. Additionally, image queries are made via the Flickr API and, as the above tasks can take more than a second each, processed requests are entered into a database to speed up the return rate the next time the same string, phrase, or word is requested.

Educationally, FunWritr is an online environment for open-ended language and literacy exploration. Students write words, phrases, sentences, and stories and are supported via textual, visual, and aural feedback at different grain sizes and in different ways. At the lexical level, users are supported via spelling suggestions, definitions, image collages, spoken pronunciations, part of speech designations, sound effects, word meaning disambiguation, and word family exploration. At the phrasal and sentential level, supports such as image collages, grammar tagging, and text to speech are available. Curricularly, the application seeks to support and cultivate immersive writing experiences such as sustained writing, word play and language exploration, story creation, adaptation, dissemination and book finding.

Organized to provide feedback and support to users based on the words, phrases, and writing pieces they type, the application is made up of three levels or regions: a

composition environment, a word meaning and disambiguation space, and a relational word mapping environment. At each level, student writing serves as the catalyst for the options available to the learner and has the potential to add linguistic nuance and contours to the user-created writing while also serving as a point of departure for language exploration. From the user's perspective the entry point and catalyzing component is the composition environment (see figure 33). As the user types, a collage of images is returned to reflect the meaning of the phrase closest to the cursor –highlighted in blue. The highlighted phrase is also shown in the grammar noticing area in the bottom left corner of the screen. Noun, verb, and prepositional phrases as well as clauses are labeled as such and the words in the phrase are tagged for their part of speech. Each noun, verb, adjective, and adverb within the highlighted phrase is also displayed in its own three-image meaning collage around the periphery of the center phrase collage. Moving the cursor over the collages increases their opacity while also causing them to rotate. A primary goal of the design is to maintain explicit connections between user-typed text and the multimedia features which work to make the experience engaging.

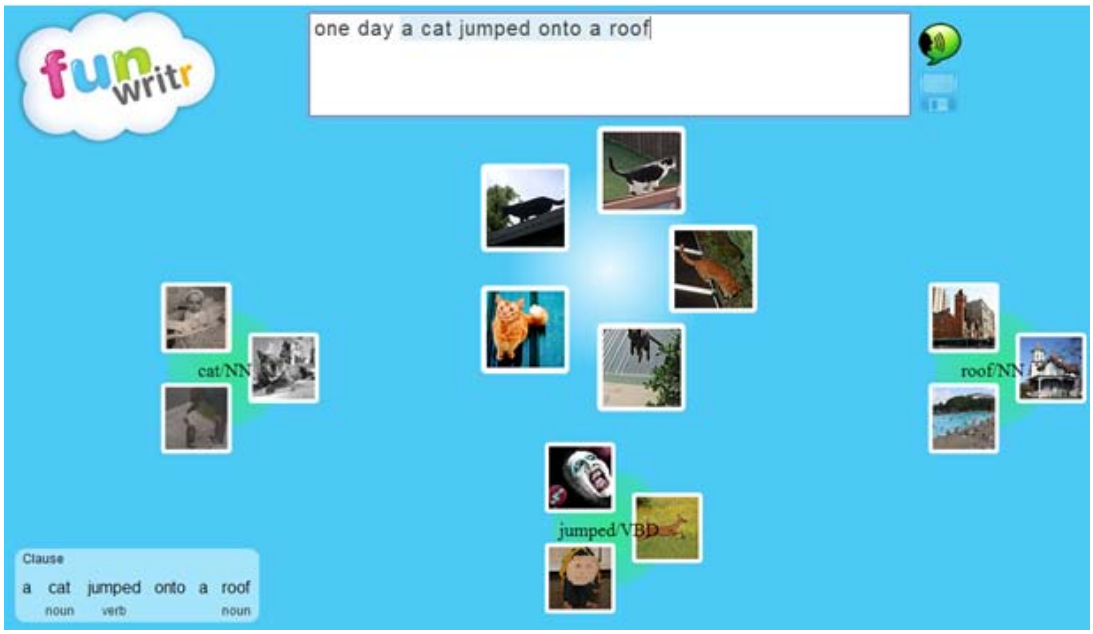

Figure 33: Example of the composition environment.

While the text-to-speech pronunciation offered by Google's Translation API may not read with the flow and intonation of an accomplished storyteller, it supports understanding at several levels. For example, user-entered text can be read back to the student via the green speech button located to the right of the text entry box.

Text to speech functionality also supports users as they express themselves in English, a highly orthographically opaque language (Seymour, Aro, & Erskine, 2003). While our long-term goal is to expand to support English-Spanish code switching as well as writing in other languages, the application is currently optimized for writing in English. In order to scaffold the efforts of novice and intermediate English language

writers we have designed a spellchecker that uses text-to-speech, and images to aid the user in selecting the word they intended to write but misspelled (see figure 34).

Figure 34: Example of spell checking support.

Words not recognized by the spell checker are highlighted in red and a list of possible word matches and corresponding images are displayed below. Moving the cursor over one of the possible word matches highlights the selected row in yellow and triggers a text-to-speech pronunciation of the word. Clicking on a suggested word replaces the unrecognized word in the text entry box. As no list of recognized words is complete, the

final item in the list of suggested words is the word highlighted in red –allowing the user to confirm the spelling of the word they have typed.

While somewhat problematic, encouraging users to correct or explicitly confirm the spelling of the words they write ensures a higher level of support at the lexical level as given by the word meaning and disambiguation space as well as the word mapping level.

As a user types in the composition space, collages of images are displayed representing phrases (see figure 33). Around its periphery, image collages of lexical items tagged with a single word as well as their part of speech (nouns, verbs, adjectives, or adverbs) are organized based on the order with which they appear in the phrase. Each word-based collage is clickable –activating a word meaning and disambiguation level, powered by WordNet (Fellbaum, 1998), that displays images, definitions, and similar words for each distinct meaning of a given word (see figure 35).

According to the linguists who work on the WordNet project, the word ‘cat’ for instance, has ten different meanings, eight as a noun and two as a verb. Exploring the word ‘cat’ then at this level is an interaction with word meaning via images, written and TTS word definitions and synonyms, as well as an interaction with lexical polysemy in that each unique meaning of a word, displayed in order of popularity, is given its own panel within a rotating carousel.

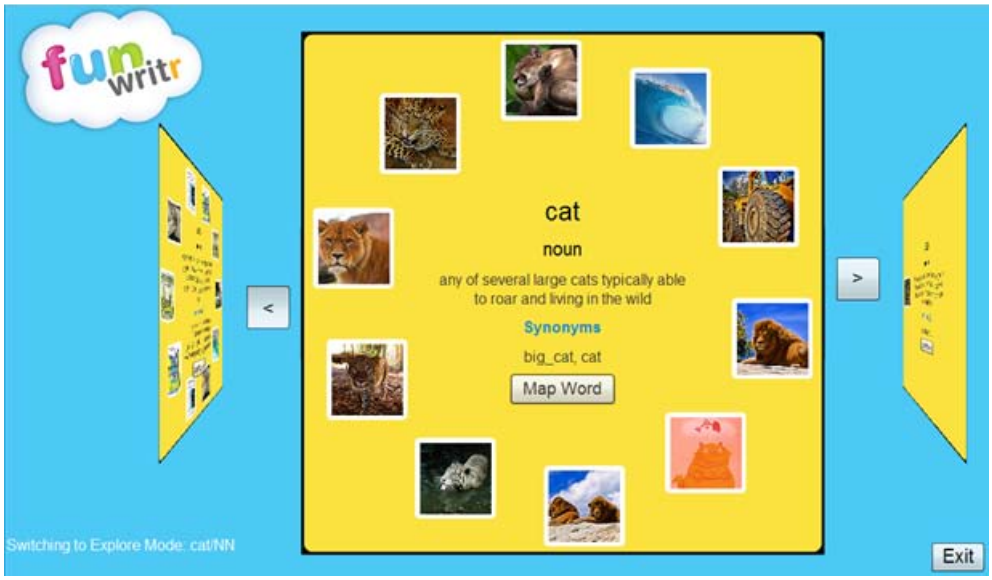

Figure 35: Word meaning and disambiguation level for ‘cat’.

Once a particular meaning of a word has been identified, connections between it and other words in the same word family can be explored via the word-connection or mapping level (see figure 36). This level makes conveying the interconnection among lexical items within the same word meaning family. Word meaning families differ depending on the part of speech, adjectives and adverbs have little in the way of hierarchies and are subsequently displayed as a cloud of meaning similarity. For example, the most popular meaning of the adjective ‘big’ has more than 45 similar words from ‘ample’ to ‘wide-ranging’. Each of the 45 meanings are displayed with its own image collage. Verbs and nouns on the other hand are situated within modest to substantial ontologies. For example the most popular meaning of the noun ‘cat’ has one parent or direct hypernym ‘feline’ and two children or hyponyms ‘domestic cat’ and ‘wildcat’.

Each related parent and child word is displayed with its own clickable image collage on either the upper (parent/hypernym) or lower (child/hyponym) part of the screen. In this way users can navigate ontologies: exploring how words, meanings, and things are connected; or in search of new and possibly more precise words to add to their writing.

Figure 36: Word interconnection environment.

From a typing space with some unique scaffolds, to an entry point to the entire ontology of the world of objects, user choice dictates the type and trajectory of the experience.

Even as the server-side algorithms attempt to maximize the precision with which images are returned, young and intermediate uses of English have an opportunity to

notice the range of images others have associated with the words and phrases they enter, whose meanings deviate substantially from official definitions.

Design process, findings, and discussion

Interest in exploring the idea of an online writing mashup emerged for the first author while collaborating on an article about the potential and pitfalls of using mashups in traditional educational contexts (Liu et al., 2008). After sharing the initial idea with his co-authors and others, he formed a group based on a shared affinity for language learning, literacy development, and educational technology development and research.

After nearly a year of meeting to build consensus we began building prototypes and proof of concept mockups, we also started giving presentations to gather feedback, push our thinking, and craft our rationale. Our path has been influenced by different members of the group, by their input, from a designer who joined our group, from undergraduate computer science interns, prospective instructional technology students, and attendees at our conferences.

In terms of taglines or overarching themes for our design along the four dimensions of the social, the affective, language learning, and new literacies they respectively might include:

- writing stories together and sharing them with others,
- smiling, laughing, and thinking through writing,
- noticing and experimenting with language features and semantic nuance,
- an interface for reveling in and directing the shifting nature of language.

Our ethnographic research has led us to note the dearth of environmental supports available to students in the second grade classroom we are in. While the walls are covered with posters listing literacy strategies and a student constructed word wall is displayed, these supports are finite and unchanging based on the type of writing undertaken by the students. Raised hands for adult assistance, whispered requests for help from classmates, scanning their writing journal, and a trip to the classroom library to consult a dictionary improve the flexibility of the supports somewhat though they still afford the learner a modest trajectory in their movement toward central participation in language production (Lave & Wenger, 1991).

Additionally, through observation and semi-structured interviews, identifying the practices wherein writing is embedded has led us to understand that for many of our participants, writing is seen as an activity almost solely initiated and defined by school. Used as a way to demonstrate knowledge and familiarity with the conventions and rules of standard English discourse (Gee, 2007).

Finally, in the initial interactive episodes students have had with FunWritr, we noted the influence of verbal descriptions of the application on users' initial usage patterns. One student, told it is a tool for finding images of his favorite animals uses it to explore interconnections between members of the animal kingdom. Another student, for whom FunWritr is described as a place to write stories, uses it as such, largely ignoring ontological navigation.

Positioning the design as we have has created technological and appropriateness threshold tensions. The ambitious nature of the writing and language exploration supports make the application computationally intensive. At this point the computational resources available to us constrain use to one or two users at a time, limiting the amount of access any one participant might have as well as constraining the potential for cross-pollination in terms of usage patterns. In terms of appropriateness, while we have several measures in place to reduce the probability that users may come across images normally considered inappropriate for display in an elementary school classroom, given the dynamic nature of the application it is inevitable that such event may occur.

Implications

The elliptical, collaborative, shifting act of designing educational technologies puts the designers and developers in the heady and humbling position of creator to the instructional systems, digital worlds, and microworlds (Papert, 1980) that emerge from their efforts. In most cases these efforts require a good deal of resources to realize, often necessitating institutional support. Such support often comes with expectations to deliver applications capable of addressing established or anticipated needs better or more cheaply than existing approaches and in doing so yielding a return on the institutional resources invested.

Beginning the educational technology creation process with discreet and measurable content objectives meant to meet stated needs constrains what might be created, simultaneously focusing and limiting the gateways into and pathways through what is often referred to as *the content*. This design grammar for educational technology

aligns reasonably well with roles often played by educational technologists, roles of service requiring them to concentrate their efforts on delivering predefined content via novel interactions meant to increase the probability that particular skills or understandings are gained. This sort of orientation is similar to that of public school classroom teachers who are encouraged to view their jobs as working to understand how to create and deliver lessons which convey the established and approved local/state/national curriculum. In both the teacher's and technologist's case, each is directed to focus on, whether incrementally or radically, making their impact in the way students come to experience, understand, and demonstrate understanding through a created activity or series of directed activities. While planning and orchestrating such activities is necessary, it creates a number of constraints. Firstly, teachers and educational technologists working within these constraints are tasked with spending the bulk of their resources building activities or applications capable of transporting their students or users to explicitly stated, measurable, learning destinations either at a more rapid pace than before and/or at a higher overall fidelity. This transport orientation to classroom teaching and educational technology diminishes the space for teachers and educational technologists to begin their thinking about activity or experience design outside of the confines of articulated end goals. Time and support to experiment and think deeply about the types of experiences not only increases the number of possible experiences, it makes possible a potentially more diverse range of experiences. It also has the potential to involve the student in experiences that are not merely superficially constructivistic but offer the user control over the pace, direction, and tone of the interaction.

The experience of working on FunWritr, an application on a socio-technical, socio-educational trajectory upon which and with which collaboration and collective experiences can take place, points a way forward for others interested in beginning the design process before questions of curriculum are decided. We have identified several aspects of our trajectory which have supported us in persevering to allow for the ongoing emergence of FunWritr along curricular and pedagogical lines.

The New Literacy Studies forefronts the ways meaning making in reading and writing are embedded within cultural or social practices (Gee, 2007) meaning that growth, false starts, idling, and understanding are phenomena occurring, influenced, impelled, and supported by teachers, students, classrooms, schools, systems of education, communities, families, and researchers(Au, 1998). Furthermore, social constructivist perspective on literacy attuned to student diversity considers how student's cultural capital (Bourdieu & Passeron, 1990) might be revalued. Future design intentions for FunWritr include creating ways to support code switching wherein English may or may not be the matrix language (Jake, Myers-Scotton, & Gross, 2002).

Chapter 5

> It is against this background that we have to locate the 'amazement' that marks the origins of philosophy: philosophy begins the moment we do not simply accept what exists as given … but raise the question of how is what we encounter as actual also possible (Žižek, 1993, p. 2)

> Culture, however, is an involuntary adventure, the movement of learning which links a sensibility, a memory and then a thought, with all the cruelties and violence necessary (Deleuze, 1994, p. 205)

> The third meaning [in addition to connotation and denotation] is obtuse, indirect, based on an involuntary memory or association triggered by the scene. (Ulmer, 2005, p. 62)

> It may be that the only fit teachers never teach but are artists, and artists of the kind most blankly masked and least didactic. (Agee, 1965, p. 252)

In this study I inquired about and re-presented people and technological artifacts within the educational sphere as *they* and sometimes *we* interacted with each other. Through extended pieces of descriptive writing, I wondered, analyzed, and sometimes guessed about (Horgan, 1996) what the experienced forces, feelings, and actions of a

collection of individuals interacting in a variety of places and ways might mean. In doing so, I undertook an experiment of experience and possibility. An experiment in deferred explicit meaning making, in creating a writerly text that was a larger leap than reading a mystery novel, wherein the reader tries to guess at authorial trajectory like a game of Clue, guessing who is to blame and how it happened—it's probably the usual suspects anyway. An experiment wherein research is positioned as *an open question*, a question where things *don't add up but are always threatening to* (Stewart, 2008, p. 72), where the will for things to add up is as salient as those moments when they actually almost do and as weighted with the impossibility of itself as producing an answer in the form of a number, or a robust theory, or a gotcha moment—along with a satisfactory question one of them answers (Adams, 1997).

Through surveys, historical analyses, literature reviews, multivariate analyses, interviews, case studies, and deconstruction, we as a field have constructed and named the obstacles to resonant classroom technology use. We have marshaled disciplined thinking in thinking through the problems of our discipline. In writing chapter four, description, movement, and connection through contexts and interactions attempt to perform the role of methodological and analytical calcite between and around the flagstone of the *expected*, the *known*, the *likely*, the *unlikely-but-retrospectively-obvious*, and the *exciting theoretical or practical breakthrough* and other registers of thought (Thrift, 2008) in a way that might suggest an avenue for methodological renewal (Latour, 2008).

The epistemic and theoretical flagstones within the writing in chapter four might be applied to several paragraphs within a section, a scene, a *line*, or multiple *lines*. Events might be understood and explained through the lens of: testing and standardization undermining academic standards (McNeil, 2000; Wills & Sandholtz, 2009), technology as a tool for increasing instructional efficiency (Cuban, 2003), boredom, anger, and stress leading to Curricular disengagement (Furlong, Gilman, & Huebner, 2009), technologies as politically created and thereby mutually implicated artifacts (Pacey, 1983), teaching in front of observers as atypical performance (Padgett, 2006; Weade & Evertson, 1991), governmentality and technologies of the self in the elementary school classroom (Foucault, 1988, 1991), general and ELL student sense making through contextual clues (Walters, 2006), or technological gravity as responsible for a hardware-centric approach to classroom technology integration (McDonald & Gibbons, 2009).

There were moments where technology was in the employ of discourses of efficiency (Cuban, 2003) driven largely by testing and assessment regimes (Corson, 2000) –themselves propped up by accountability discourses (Grodsky, Warren, & Felts, 2008; Nichols & Berliner, 2008; Scott, 2008). Moments wherein these discourses and outcome-based, standards-driven pressures (Doll, 2008; Pinar, 1995; Tyler, 1949) seemed to collapse opportunities to meet at the point of interaction (Roy, 2003), suppress creative technology use, and quash the overflowing, heterogeneous (Deleuze & Guattari, 1983) expression and pursuit of wonderful ideas (Duckworth, 2006) –not to mention reconceptualized notions of prolonged self-directed study (Pinar, 2006). Moments wherein teachers favored step-wise, scaled-up, technologies of transmission,

homogenization, and curricular traversal when the mantra of getting ready for the test, the hegemony of the test-prep worksheet, the dull everyday violence of those darkened classrooms flattened out by gotta-get-through-it-pedagogies bullied by a curriculum got down by deficit thinking (García & Guerra, 2004; Valencia, 1997; Weiner, 2006), by economic hegemonies (Corson, 2000), by narrow definitions of knowledge and standardized ways of demonstrating understanding took over. These could have been my *findings* as they iteratively emerged (Willig & Rogers, 2008) and came into focus in all their macro-micro splendor.

Could have been, but did not.

The drip, drip, drip of classroom life was more interesting.

The school, more complicated.

Their lives, more tangled up in benchmark testing, sideways glances, Reading Rally Day, community festivals, Back Jacks, secret naps, and blank moments than any theoretical/organizational framework and corresponding research methods could support.

This is not to say however, that each of the above theories, applied to an exchange of dialogue, an activity, a school day, or a school year doesn't afford different ways of communicating with and coming to notice, identify, and understand the forces, actors, and artifacts therein. Each offers potentially relevant, useful, and sometimes provocative insights into what is going on. Each, based on the way chapter four is written, remains somewhat possible long after they otherwise might have been turned *into matters of fact* (Latour, 2008, p. 261), winnowed by a favored theory. This sort of performance, wherein a haphazard cacophony of theories, in paranoid defense of territory (Sedgwick, 1997),

works to refute the others along a downward spiral, a tailspin trajectory, demonstrates the fragility of contemporary knowledge projects.

Sedgwick (1997, p. 15) cautions us about *the ranging and reductive force of strong theory* as sometimes *the result is that both writers and readers can damagingly misrecognize whether and where real conceptual work is getting done, and precisely what that work might be.* Troubling too is the way publication regimes (Toscano, 2004) favor established theoretical avenues of explanation, suppressing a host of non-sanctioned ways of pondering scenes, suppressing amazement (Myers, 2003) and experimentation.

But what if the experiment fails for reader after reader? What it if falls flat? What if what I took for handholds within the flows along spaces considered smooth by rigorous social scientific investigation (Kwinter, 2001) were something else? What if instead of leaning out and looking around from conceptual crags in the mountainface (Vendler, 1995) I was somewhere much closer to base camp? The writing may fail more easily than the experiment, yet, how could the experiment not fail if judged by a social science expecting the performance of a voluntary, conscious, deliberate traversal through culture (Deleuze, 1994; Lather, 2007; Latour, 2008; Thrift, 2008)? And yet, how could it be total failure if one accepts that performative writing *can have as much rigour as any other experimental setup, once it is understood that the laboratory, and all the models that have resulted from it, provide much too narrow a metaphor to be able to capture the richness of the worlds (Despret 2004)* (Thrift, 2008, p. 12). How then can the

adventurous experiment of performing chemtrails of swirls of that richness not be, itself seen, as rigorous in its own right (Thrift, 2008)?

Writing along this trajectory any further would fail to be helpful in performing anything besides my own paranoia—risking a substitution of adversariality for anything resembling the sort of conceptual work toward which I have been wayfaring.

Such a performance along a more paranoid line of flight would have me stating how I would rather offer up less developed work along a resonant but exploratory trajectory than to have done a laudable job on research that was more of the same. It would involve explaining how messy this process was, how larval. How it was not really a single process but a wayfaring within and around the complexity and nuance of the everyday. How it required an experimental methodology capable of settling down and settling in with an attentive orientation and a will to return to a place long after what some in social science research call *saturation* would have said to have occurred. I would have evoked Gee's layers of classroom and societal discourse (Gee, 2005a, 2007), Cary's multiple ways of approaching knowing (Cary, 2006), and suggested that some of the phrases and parts of paragraphs in chapter four tilted at ways of writing up experience (Coupland, 1995, 2006; Goodall, 2000; Richardson, 1998; Richardson & St. Pierre, 2005; Stewart, 1996) that produced or evoked one or several *somethings* in each reader.

Moreover, I'd write that these *somethings* may involve insights or understandings about the local ways technology, its discourses, thinking and work around it enters, influences, was influenced by, or didn't influence what happened in classrooms and other spaces written about in chapter four. Via the strain of new ethnographic writing I used, a

flattened-out style that maintained the moment, rarely diverging or indulging the reader with back story, I'd write that the ways the reader might approach thinking about, organizing, designing, or implementing educational technologies in such a network of artifacts, individuals, groups, schedules, agendas, and contexts described in chapter four (Wallace, 2004) cannot help but be changed, though perhaps not in an articulable way. I'd say that reading chapter four probably won't help an administrator make a decision, that reading it most likely will not guide an instructional technologist designing an application, that reading it won't help a teacher plan a lesson for Monday morning. But, I'd write, it may make the administrator, the instructional technologist, the researcher, and the teacher change the way they feel about and approach Monday morning (Roy, 2003).

I'd go on to describe chapter four, letting it come across as if I had a goal and model for it all along, as if I might have been following an explicit plan. I'd state that I was doing this research not to *understand* the individuals, the technology, or the place and then assemble moments that would cohere into a telling of that understanding via *a good enough story* (Stewart, 2007, p. 5) but rather to write some of the nuance and contours in which the object of educational technology—in its many shapes and forms, moves and breathes (Stewart, 2007) . I'd claim that by writing educational technology back into its contexts, in locking it up in long passages, in noting the minutes and hours when the iPods, and classroom technology center computers sat idle, in chronicling the hours and days when the computer lab remained dark, in witnessing the many moments when the analog or digital projectors projected test prep worksheets, I contributed an

affective understanding to Cuban's thesis (2003, 1986) about the mismatch between technology discourses and educational technology use. I'd posit that, despite questions as to its legitimacy, this affective, inarticulable sort of understanding is less easy to shake with a belief in hard work and the next innovation than more traditional versions of research are.

Next I'd write that in my own way, and via my own process for identifying, performing, and troubling what I experienced (Bishop, 1999; Foley, 2002; Goodall, 2000; Richardson, 1998; Richardson & St. Pierre, 2005; Stewart, 1996), I noticed moments of possibility. Bounded moments of bliss-following (Campbell & Moyers, 1988) possibility, moments when the classroom teacher, distracted with small group work affords the rest of the class the chance to nest books within books, read in groups, and point at the changos. Moments when a white piece of paper in a transparent plastic cover becomes a magnifier, moments when students get into a story they are writing in writer's workshop, or at the listening center, or the computer center, or during reading rally day.

Some of these moments, I'd write, hold more potential than the *we'll-have-fun-after-the-test* promise—which echoed in classrooms November through April and played out each May like a promise to run that marathon just as soon as you finish the current round of chemotherapy. I might claim that based on the *data*, educational technologists have a better chance of changing the meta-narratives about technology than they do getting technology use to perform up to the level of the meta-narratives.

I'd state that this is very much a matter of curriculum, and the territorialization of the term *learning resource* whereby learning resources created to render educational the

experience of listening to a podcast, reading a novel or a picture book, visiting a website, or exploring a science kit, is largely through the writing of assessment items that feed a paranoid system bent on gauging comprehension like a doctor who insists on taking her patient's temperature every fifteen minutes, seven hours per day, thirty two weeks per year.

At the end of this hypothetical positioning, I'd acknowledge the difficulty associated with thinking about this type of work as a scholarly enterprise when compared to more common approaches to research. Not in that it fails to be *something*, but that making sense of that *something*, determining its academic merit may prove elusive. I take responsibility for much of this difficulty. It is one thing to read the writerly text of a seasoned scholar, it is mostly likely, quite another matter to read such a text written by someone who, like me, felt as if he was wayfaring along with the reader, a writer who, like me, needed a generous and seasoned reader for the experiment to *work* at all, a writer who, like me, felt like he was workshopping ideas about writing, re-presentation, and ways of knowing more than he was offering up a finished piece of research.

Educational technology, which began, in Hlynka's opinion, with the publication of Jan Amos Comenius' *Orbis Sensualium Pictus*, has often been positioned as a perilous, heroic, adventure toward mastery, progress, and respite (Willcocks, 1917; Winchester, 2004; Singer, 1978). Yet the æffect of the last couple hundred pages reminds us that like people, technologies have *grown up, and always must grow up, in a social medium* (Dewey, 1916, p. 344). It is the social medium of school and the layers of

practices, affects, connections, interactions, individuals, technologies, groups, and artifacts that create mutually influencing possibilities.

As I wrote in chapter two, in *Electronic Monuments*, Gregory Ulmer (2005) posits three overlapping epistemologies. A knowing based on orality, passed down through the family—positioning religion as the solver/resolver/instigator of society's problems; a knowing based on literacy, conveyed through school–forefronting science as the solver/resolver/instigator of society's problems; and Electracy, taught only implicitly via the vehicle of the flash of passing images–offering entertainment as the answer to and instigator of society's problems. My project, or at least my trajectory, resonates with Ulmer's (2005) construct of Electracy which, *makes it possible to revisit our relationship to disaster, our relationship to events that resist every effort of problem solution* (2005, p. 140). In doing so, it is an attempt at a mode of affective congress with the diffuse and ranging assemblage of *educational technology* as it communes with and forms part of other assemblages within myriad educational contexts. My belief is that the experience of disorientation (Stewart, 1987) often associated with this type of writing may be replaced with an elusively useful, affective, scholarly, inarticulable residue of understanding of educational technologies in several educational contexts and an experiential appreciation of other ways of reading, knowing, and doing educational technology research.

References

_ISD Bond Information. (2009). *Bond Information*. Retrieved June 24, 2011, from http://www._isd.net/bond/

Adams, D. (1997). *The hitchhiker's guide to the galaxy*. New York: Ballantine Books.

AECT. (2008). Educational technology. *Association for Educational Communications and Technology*.

AERA. (2006). Standards for reporting on empirical social science research in AERA publications: American Educational Research Association. *Educational Researcher, 35*, 33-40.

Agee, J. (1965). *Let us now praise famous men*. London: Peter Owen.

AI: Artificial intelligence research at USC's information sciences institute. (n.d.). *AI: Artificial Intelligence Research at USC's Information Sciences Institute*. Retrieved November 2, 2009, from http://www.isi.edu/AI/isd.htm

Anfara, V. A., Brown, K. M., & Mangione, T. L. (2002). Qualitative analysis on stage: Making the research process more public. *Educational Researcher, 31*(7), 28-38.

Aristotle. (1934). *Aristotle: Poetics*. (T. A. Moxon, Ed.).

Au, K. H. (1998). Social constructivism and the school literacy learning of students of diverse backgrounds. *Journal of Literacy Research, 30*(2), 297-319.

Bakia, M., Yang, E., & Mitchell, K. (2008). *National educational technology trends study: Local level data summary*. US Department of Education. Available from: ED Pubs. P.O. Box 1398, Jessup, MD 20794-1398. Tel: 877-433-7827; Fax: 301-

470-1244; Web site: http://www.edpubs.org. Retrieved from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=ED504192

Banathy, B. H. (1991). *Systems design of education: A journey to create the future*. Educational Technology.

Banham, R. (1999). *A critic writes: Selected essays by Reyner Banham*. University of California Press.

Barab, S., Dodge, T., Thomas, M. K., Jackson, C., & Tuzun, H. (2007). Our designs and the social agendas they carry. *Journal of the Learning Sciences*, Design Research Strand, *16*(2), 263-305. doi:Article

Barab, S., Thomas, Dodge, Carteaux, & Tuzun. (2005). Making learning fun: Quest Atlantis, a game without guns. *Educational Technology Research and Development*, *53*(1), 86-107. doi:10.1007/BF02504859

Barab, S., Thomas, M. K., Dodge, T., Squire, K., & Newell, M. (2004). Critical design ethnography: Designing for change. other, . Retrieved February 6, 2008, from http://www.anthrosource.net/doi/abs/10.1525/aeq.2004.35.2.254

Barnhart, R. K. (Ed.). (1999). *Chambers dictionary of etymology*. Edinburgh: Chambers.

Barthes, R. (1974). *S/Z* (1st ed.). New York: Hill and Wang.

Behar, R. (1996). *The vulnerable observer: Anthropology that breaks your heart*. Boston: Beacon Press.

Bell, J. (2005). Going keyboard crazy for mental literacy. *Literacy Today*, (43), 7. doi:Article

Benjamin, W. (1969). *Illuminations* (1st ed.). New York: Schocken Books.

Bertalanffy, L. von. (1969). *General system theory*. G. Braziller.

Bishop, W. (1999). *Ethnographic writing research: Writing it down, writing it up, and reading it*. Portsmouth, NH: Heinemann.

Boas, G. (1969). *The history of ideas*. Scribner.

Bobbitt, J. F. (1918). *The curriculum*. Houghton Mifflin Company.

Böll, H. (1994). *A soldier's legacy (Das Vermächtnis)*. Northwestern University Press.

Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society, and culture*. SAGE.

Brock, D. C., & Moore, G. E. (2006). *Understanding Moore's law: Four decades of innovation*. Chemical Heritage Foundation.

Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, *2*(2), 141. doi:Article

Buchanan, R. A. (1965). *Technology and social progress* (1st ed.). Oxford, New York: Pergamon Press.

Burke, K. (1935). *Permanence and change: An anatomy of purpose*. New York: New Republic, inc.

Callahan, R. E. (1964). *Education and the cult of efficiency*. University of Chicago Press.

Campbell, J., & Moyers, B. D. (1988). *The power of myth*. Doubleday.

Cary, L. J. (2006). *Curriculum spaces: Discourse, postmodern theory and educational research*. Peter Lang.

Ceruzzi, P. E. (2003). *A history of modern computing*. MIT Press.

Chapelle, C. (2003). *English language learning and technology: Lectures on applied linguistics in the age of information and communication technology*. Language learning and language teaching. Amsterdam: John Benjamins Pub.

Chatham, R. (2008). About Tactical Language Training LLC. Retrieved November 3, 2009, from http://www.tacticallanguage.com/aboutus.html

Clark, N. (2003). The play of the world. In M. Pryke, G. Rose, & S. Whatmore (Eds.), *Using Social Theory: Thinking Through Research* (pp. 28-46). London: SAGE in association with the Open University.

Clifford, J., & Marcus, G. E. (Eds.). (1986). *Writing culture: The poetics and politics of ethnography: A school of American research advanced seminar*. School of American Research (Santa Fe, N.M.). Berkeley: University of California Press.

Clough, P. T. (1998). The End(s) of Ethnography: Now and Then. *Qualitative Inquiry, 4*(1), 3-14.

Cognition and Technology Group at Vanderbilt. (1992). The Jasper series as an example of anchored instruction: Theory, program description, and assessment data. *Educational Psychologist, 27*(3), 291-315. doi:Article

Coiro, J., Lankshear, C., & Leu, D. J. (Eds.). (2008). *Handbook of research on new literacies*. New York: Lawrence Erlbaum Associates/Taylor & Francis Group.

Collins, A., Joseph, D., & Bielaczyc, K. (2004). Design research: Theoretical and methodological issues. *Journal of the Learning Sciences, 13*(1), 15-42. doi:Article

Comenius, J. A. (1999). *Orbis pictus*. Kessinger Publishing.

Conteh, J., Gregory, E., Kearney, C., & Mor-Sommerfeld, A. (2005). *On writing educational ethnographies: The art of collusion*. Sterling, USA: Trentham Books.

Corbett, A. T., Koedinger, K. R., & Hadley, W. (2002). Cognitive tutors: From the research classroom to all classrooms. In P. S. Goodman (Ed.), *Technology enhanced learning: opportunities for change* (p. 340). Routledge.

Corson, D. (2000). The eclipse of liberal education in the twenty-first century? *Educational Review, 52*(2), 111-123. doi:10.1080/00131910050077006

Coupland, D. (1995). *Microserfs* (1st ed.). New York: ReganBooks.

Coupland, D. (2006). *JPod: A novel* (1st ed.). New York: Bloomsbury.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage Publications Inc.

Cuban, L. (1986). *Teachers and machines: The classroom use of technology since 1920*. NetLibrary, Incorporated.

Cuban, L. (2003). *Oversold and underused: Computers in the classroom*. Harvard University Press.

DBRC, T. D.-B. R. C. (2003). Design-based research: An emerging paradigm for educational Inquiry. *Educational Researcher*, *32*(1), 5-8.

Dede, C. (2004). If design-based research is the answer, what is the question? A commentary on Collins, Joseph, and Bielaczyc; diSessa and Cobb; and Fishman, Marx, Blumenthal, Krajcik, and Soloway in the JLS special issue on design-based research. *Journal of the Learning Sciences, 13*(1), 105-114. doi:Editorial

Dede, C., Honan, J. P., & Peters, L. (2005). *Scaling up success*. Jossey-Bass.

Dede, C., Nelson, B., Ketelhut, D. J., Clarke, J., & Bowman, C. (2004). Design-based research strategies for studying situated learning in a multi-user virtual environment. *Proceedings of the 6th international conference on Learning sciences* (pp. 158-165). Santa Monica, California: International Society of the Learning Sciences. Retrieved from http://portal.acm.org/citation.cfm?id=1149126.1149144

Deleuze, G. (1994). *Difference and repetition*. New York: Columbia UniversityPress.

Deleuze, G., & Guattari, F. (1983). *Anti-Oedipus: Capitalism and schizophrenia*. Minneapolis: University of Minnesota Press.

Derrida, J. (1982). *Margins of philosophy*. Chicago: University of Chicago Press.

Derrida, J. (1997). *Of grammatology* (Corrected ed.). Baltimore: Johns Hopkins University Press.

DeWalt, K. M., & DeWalt, B. R. (2002). *Participant observation: A guide for fieldworkers*. Walnut Creek, CA: AltaMira Press.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Macmillan.

Dewey, J. (2007). *The sources of a science of education*. READ BOOKS.

Dewey, J., Ratner, J., & Post, E. A. (1939). *Intelligence in the modern world: John Dewey's philosophy*. Modern Library.

Dick, W., & Carey, L. (1978). *The systematic design of instruction*. Scott, Foresman and Company. Retrieved from

http://books.google.com/books?lr=&ei=kQb7SvOpB5mOkASB3vGbBg&as_brr=0&id=LNmcAAAAMAAJ&dq=dick+and+carey&q=needs#search_anchor

Didion, J. (2006). *We tell ourselves stories in order to live: Collected nonfiction*. Alfred A. Knopf.

Dills, C. R., & Romiszowski, A. J. (1997). *Instructional development paradigms*. Educational Technology.

diSessa, A. A., & Cobb, P. (2003). Ontological innovation and the role of theory in design experiments. (S. A. Barab, Ed.)*Journal of the Learning Sciences*, Design-based research: clarifying the terms, *13*(1), 77-103.

Doll, W. E. (2008). Complexity and the culture of curriculum. *Educational Philosophy & Theory*, *40*(1), 190-212. doi:10.1111/j.1469-5812.2007.00404.x

Duane, J. E. (1973). *Individualized instruction--programs and materials*. Educational Technology.

Duckworth, E. R. (2006). *The having of wonderful ideas and other essays on teaching and learning*. New York: Teachers College Press.

Edelson, D. C., Gordin, D. N., & Pea, R. D. (1999). Addressing the challenges of inquiry-based learning through technology and curriculum design. *Journal of the Learning Sciences*, *8*(3/4), 391. doi:Article

Eisner, E. W. (2004). *The arts and the creation of mind*. Yale University Press.

Ely, D. P., & Plomp, T. (1996). *Classic writings on instructional technology*. Libraries Unlimited.

Emerson, R. M. (1995). *Writing ethnographic fieldnotes*. Chicago guides to writing, editing, and publishing. Chicago: University of Chicago Press.

Fellbaum, C. (Ed.). (1998). *WordNet: An electronic lexical database*. Cambridge, Mass: MIT Press.

Finn, J. (1960). A new theory for instructional technology. *Educational Technology Research and Development, 8*(6), 84-94. doi:10.1007/BF02719721

Finn, J. (2000). *Extending education through technology: Selected writings by James D. Finn*. IAP.

Firth, A., & Wagner, J. (1997). On discourse, communication, and (some) fundamental concepts in SLA research. *The Modern Language Journal, 81*(3), 285-300. doi:10.2307/329302

Foley, D. E. (1995). *The Heartland chronicles*. Philadelphia: University of Pennsylvania Press.

Foley, D. E. (2002). Critical ethnography: the reflexive turn. *International Journal of Qualitative Studies in Education (QSE), 15*(4), 469-490. doi:10.1080/09518390210145534

Foucault, M. (1988). *Technologies of the self: A seminar with Michel Foucault*. (L. H. Martin, H. Gutman, & P. H. Hutton, Eds.). Amherst: University of Massachusetts Press.

Foucault, M. (1991). On governmentality. In G. Burchell, C. Gordon, & P. Miller (Eds.), *The Foucault Effect: Studies in Governmentality: With Two Lectures by and an Interview with Michel Foucault* (p. 307). Chicago: University of Chicago Press.

Fritsch, A. J., & Gallimore, P. (2007). *Healing Appalachia: Sustainable living through appropriate technology*. Lexington: University Press of Kentucky.

Fulton, K., & Pruitt-Mentle, D. (1998). *Educational technology expert panel: Background paper for the expert panel on educational technology* (Criteria) (p. 21). Maryland: U.S. Department of Education. Retrieved from http://www.ed.gov/PDFDocs/paper.pdf

Furlong, M., Gilman, R., & Huebner, S. (Eds.). (2009). *Handbook of positive psychology in schools*. Hoboken: Taylor & Francis.

Gadamer, H.-G., Weinsheimer, J., & Marshall, D. G. (2004). *Truth and method*. Continuum International Publishing Group.

Gagné, R. M. (1987). *Instructional technology*. Routledge.

Galbraith, J. K. (2007). *The new industrial state*. Princeton University Press.

García, S. B., & Guerra, P. L. (2004). Deconstructing deficit thinking. *Education & Urban Society*, *36*(2), 150-168. doi:Article

Garver, N. (2008). What theory is. *Journal of Folklore Research*, *45*(1), 63-70.

Gee, J. P. (2005a). *An Introduction to Discourse Analysis: Theory and Method* (2nd ed.). New York: Routledge.

Gee, J. P. (2005b). *What video games have to teach us about learning and literacy*. New York: Palgrave Macmillan.

Gee, J. P. (2007). *Social linguistics and literacies: Ideology in discourses*. Hoboken: Taylor & Francis.

Geertz, C. (1973). *The interpretation of cultures: Selected essays*. New York: Basic Books.

Geertz, C. (2003). *The interpretation of cultures: selected essays*. Basic Books.

Gimbel, J. (1990). *Science, technology, and reparations: Exploitation and plunder in postwar Germany*. Stanford University Press.

Glasersfeld, E. von. (1996). *Radical constructivism: A way of knowing and learning*. Routledge.

Goldberg, N. (1990). *Wild mind*. Bantam Books.

Goldberg, N. (2009). *Old friend from far away: The practice of writing memoir*. Simon and Schuster.

Goldgar, A. (2007). *Tulipmania: Money, honor, and knowledge in the Dutch golden age*. Chicago: University of Chicago Press.

Goodall, H. L. (2000). *Writing the new ethnography*. Walnut Creek: AltaMira Press.

Goody, J. (2006). *The theft of history*. Cambridge University Press.

Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now? *Educational Researcher*, *38*(4), 246-259. doi:10.3102/0013189X09336671

Grenz, S. J. (1996). *A primer on postmodernism*. Wm. B. Eerdmans Publishing.

Griffiths, A. (1996). *Prints and printmaking*. University of California Press.

Grodsky, E., Warren, J. R., & Felts, E. (2008). Testing and social stratification in American education. *Annual Review of Sociology*, *34*(1), 385-404. doi:Article

Guba, E. G., & Lincoln, Y. S. (1998). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Landscape of Qualitative Research: Theories and Issues* (pp. 105-117). Thousand Oaks, Calif: Sage Publications.

Gumbrecht, H. U. (2004). *Production of presence what meaning cannot convey*. Stanford, Calif: Stanford University Press.

Hackbarth, S. (1996). *The educational technology handbook: A comprehensive guide*. Educational Technology.

Handwerker, W. P. (2001). *Quick Ethnography*. Walnut Creek, CA: AltaMira Press.

harikrish. (n.d.). *AlphaLearnr*. Retrieved from http://www.rapidmonkey.com/alphalearnr/

Hart, C. (1998). *Doing a literature review:rReleasing the social science research imagination*. SAGE.

Hatch, J. A. (2002). *Doing qualitative research in education settings*. SUNY Press.

Headrick, D. R. (2009). *Technology: A world history*. New Oxford World History. Oxford: Oxford University Press, USA.

Hedegaard, M. (2005). The zone of proximal development as basis for instruction. In H. Daniels (Ed.), *An introduction to Vygotsky* (pp. 227-252). Routledge.

Heinich, R. (1979). *Educating all handicapped children*. Educational Technology.

Heinich, R. (2004). *Technology and the management of instruction*. IAP.

Henigan, D. A. (2009). *Lethal logic: Exploding the myths that paralyze Americangun policy* (1st ed.). Washington, D.C: Potomac Books.

Hlynka, D. (2009). The year educational technology began? *Educational Technology, 49*(3), 47-50.

Hlynka, D., & Belland, J. C. (1991). *Paradigms regained: The uses of illuminative, semiotic, and post-modern criticism as modes of inquiry in educational technology*. Educational Technology.

Hoban, C. (1965). From theory to policy decisions. *Educational Technology Research and Development, 13*(2), 121-139. doi:10.1007/BF02770042

Hoban, C. (1996). A systems approach to audio-visual communications. In D. P. Ely & T. Plomp (Eds.), *Classic writings on instructional technology, Volume 1* (Vol. 1, p. 286). Libraries Unlimited.

Hoban, C., & Zisman, S. B. (1937). *Visualizing the curriculum*. The Cordon company.

Holley, K. A., & Colyar, J. (2009). Rethinking texts: Narrative and the construction of qualitative research. *Educational Researcher, 38*(9), 680-686. doi:10.3102/0013189X09351979

Horgan, J. (1996). *The end of science: Facing the limits of knowledge in the twilight of the scientific age*. Reading, Mass: Addison-Wesley Pub.

Howatt, A. P. R., & Widdowson, H. G. (2004). *A history of English language teaching*. Oxford University Press.

Hughes, T. P. (2004). *Human-built world: How to think about technology and culture*. Chicago: Univerity of Chicago Press.

Humphrey, J. W. (2006). *Ancient technology*. Greenwood Publishing Group.

Huurdeman, A. A. (2003). *The worldwide history of telecommunications*. Wiley-IEEE.

Hwu, W.-S. (2004). Gilles Deleuze and Jacques Daignault: Understanding curriculum as difference and sense. In W. M. Reynolds & J. A. Webber (Eds.), *Expanding curriculum theory: dis/positions and lines of flight* (pp. 181-202). Routledge.

Illich, I. (1972). *Deschooling society*. Harrow Books.

Ingold, T. (2007). *Lines: A brief history*. London: Routledge.

Jake, J. L., Myers-Scotton, C., & Gross, S. (2002). Making a minimalist approach to codeswitching work: Adding the matrix language. *Bilingualism: Language and Cognition, 5*(01), 69-91. doi:10.1017/S1366728902000147

Januszewski, A. (1996). James D. Finn and the process of educational technology. *Educational Media and Technology Yearbook, 21*, 33-37.

Januszewski, A. (2001). *Educational technology: The development of a concept*. Libraries Unlimited.

Januszewski, A., & Molenda, M. (Eds.). (2008). *Educational technology: A definition with commentary*. New York: L. Erlbaum Associates.

Johnson, W. L., & Wu, S. (2008). Assessing aptitude for learning with a serious game for foreign language and culture. *Intelligent tutoring systems: 9th International Conference* (pp. 520-529). Presented at the Intelligent Tutoring Systems, Springer.

Jonassen, D. (2003). The vain quest for a unified theory of learning. *Educational Technology, 43*(4), 5-8.

Juzwik, M. M., Curcic, S., Wolbers, K., Moxley, K. D., Dimling, L. M., & Shankland, R. K. (2006). Writing into the 21st century:An overview of research on writing, 1999 to 2004. *Written Communication*, *23*(4), 451-476. doi:Article

Karwatka, D. (1996). *Technology's past* (Vols. 1-2). Ann Arbor, MI: Prakken Publications.

Kilpatrick, W. H. (1918). *The project method: The use of the purposeful act in the educative process*. Teachers college, Columbia university.

Kirkpatrick, G. (2008). *Technology and social power*. Basingstoke: Palgrave Macmillan.

Klemm, F. (1964). *A history of western technology*. Cambridge: M.I.T. Press.

Kolikant, Y. B.-D. (2009). Digital students in a book-oriented school: Students' perceptions of school and the usability of digital technology in schools. *Journal of Educational Technology & Society*, *12*(2), 131-143. doi:Article

Kwinter, S. (2001). *Architectures of time: Toward a theory of the event in modernist culture*. Cambridge, Mass: MIT Press.

Ladson-Billings, G. (1995). But that's just good teaching! The case for culturally relevant pedagogy. *Theory Into Practice*, *34*(3), 159. doi:Article

LaFreniere, G. F. (2008). *The decline of nature: Environmental history and the western worldview*. Academica Press,LLC.

Lanahan, L., & Boysen, J. (2005). *Computer technology in the public school classroom: Teacher perspectives* (Issue Brief No. NCES 2005083). National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005083

Lather, P. A. (2007). *Getting lost: Feminist efforts toward a double(d) science*. SUNY series, second thoughts. Albany: State University of New York Press.

Latour, B. (2008). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

Laurie, S. S. (1887). *John Amos Comenius, bishop of the Moravians*. At the University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

LeCompte, M. D., & Preissle, J. (1993). *Ethnography and qualitative design in educational research* (2nd ed.). San Diego: Academic Press.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.

Liou, F. W. (2007). *Rapid prototyping and engineering applications: A toolbox for prototype development*. CRC Press.

Liu, M., Horton, L., Olmanson, J., & Wang, P. Y. (2008). Anexploration of mashups and their potential educational uses. *Computers in the Schools*, *25*(3/4), 243-258.

Louthan, H. (1998). Introduction. *The labyrinth of the world and the paradise of the heart* (p. 276). Paulist Press.

Malerba, C. (n.d.). *Internal report on the current level of technology usage by teachers in _ISD* (Technology and Research). Texas.

Mallette, M. H., & Duke, N. K. (2004). *Literacy research methodologies*. New York: Guilford Press.

McClintock, R. (1971). Toward a place of study in a world of instruction. *Teachers College Record, 73*(2), 161-205.

McDonald, J., & Gibbons, A. (2009). Technology I, II, and III: Criteria for understanding and improving the practice of instructional technology. *Educational Technology Research and Development, 57*(3), 377-392. doi:10.1007/s11423-007-9051-8

McNeil, L. M. (2000). *Contradictions of school reform: Educational costs of standardized testing*. New York: Routledge.

Meehan, M. (2004, March). IT goes apolitical on Capitol Hill [Tech Insights]. *FedTech*. Retrieved from http://fedtechmagazine.com/article.asp?item_id=72

Merriam-Webster online dictionary. (1991). . Springfield, Mass: Merriam-Webster Inc. Retrieved from http://www.merriam-webster.com/dictionary/technology

Misa, T. J. (2004). *Leonardo to the internet: Technology & culture from the renaissance to the present*. Baltimore, Md: Johns Hopkins University Press.

Molenda, M. (2003). In search of the elusive ADDIE model. *Performance Improvement, 42*(5), 34-36.

Molenda, M., Pershing, J. A., & Reigeluth, C. M. (1996). Designing instructional systems. In R. L. Craig (Ed.), *The ASTD training and development handbook: a guide to human resource development*. McGraw-Hill.

Möller, M., & Kollak, S. (n.d.). Twikipedia mashup. Retrieved March 29, 2011, from http://twick.it/extern/wikipedia/

Munroe, J. P. (1912). *New demands in education*. Doubleday, Page & company.

Musser, J. (n.d.). ProgrammableWeb - mashups, APIs, and the web as platform. Retrieved March 21, 2011, from http://www.programmableweb.com/

Myers, T. (2003). *Slavoj Zizek*. London: Routledge.

National Commission on Excellence in Education. (1984). *A nation at risk*. USA Research.

National Research Council (U.S.). (2002). *Scientific research in education*. (R. J. Shavelson & L. Towne, Eds.). Washington, DC: National Academy Press.

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60. doi:Article

Nichols, S. L., & Berliner, D. C. (2008). Why has high-stakes testing so easily slipped into contemporary American life? *Education Digest, 74*(4), 41-47. doi:Article

Nisbet, R. A., & Stone, B. L. (2001). *Conservatism: Dream and reality*. Transaction Publishers.

Noble, D. F. (1997). *The religion of technology: The divinity of man and the spirit of invention*. A.A. Knopf.

Noblit, G. W., Flores, S. Y., & Murillo, E. G. (Eds.). (2004). *Postcritical ethnography: Reinscribing critique*. Understanding education and policy. Cresskill, N.J: Hampton Press.

Norgaard, R. B. (1994). *Development betrayed: The end of progress and a coevolutionary revisioning of the future*. Routledge.

Norman, D. A. (2002). *The design of everyday things* (1st ed.). New York: Basic Books.

Nowotny, H. (2006). *Cultures of technology and the quest for innovation*. Berghahn Books.

Olmanson, J., & Greenstein, S. (2008). *Distributed Biography*. Austin, TX: Digital Spaces Working Group. Retrieved from http://distributedbiography.org/

Olmanson, J., Farchy, A., & Day, P. (2010). *FunWritr*. Austin, TX. Retrieved from http://funwritr.com/

Olmanson, J., Greenstein, S., Smith, A., & Brewer, C. (2007). Designing distributed biography: Co-constructing a polyphonic application on borrowed time (Vol. 25, pp. 21-25). Presented at the ACM Special Interest Group for Design of Communication, El Paso, Texas, USA: ACM. doi:http://doi.acm.org/10.1145/1297144.1297150

Olmanson, J., Huang, C.-K., Kim, Y. S., & Chen, Y. H. (2008, December 3). *Language & literacy playground*. Presented at the Fall Brown Bag Series of the Instructional Technology Department, University of Texas at Austin.

Olmanson, J., Huang, C.-K., Kim, Y. S., Chen, Y. H., Pan, A., & Lee, J. (2009, March 2). *Language and literacy playground: With a special emphasis on our [mis]use of a design-based research methodology*. Presented at the Langauge & Literacy Doctoral Seminar -Focus on Design-Based Research, University of Texas at Austin. Retrieved from https://webspace.utexas.edu/yc5837/languageplayground/Lang_Lit_Doc_Sem_draft3.pdf

Olson, R. (2004). *Science and religion, 1450-1900: from Copernicus to Darwin*. Greenwood Publishing Group.

Olwig, K. (2002). *Landscape, nature, and the body politic*.

Oppenheimer, T. (2004). *The flickering mind*. Random House, Inc.

Pacey, A. (1983). *The culture of technology* (1st ed.). Cambridge, Mass: MIT Press.

Padgett, C. (2006). No cabaret act, just good at doing our jobs. *Times Educational Supplement*, (4702), 34. doi:Article

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas*. New York: Basic Books.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, Calif: Sage Publications.

Peters, M. A., & Burbules, N. C. (2004). *Poststructuralism and educational research*. Rowman & Littlefield.

Phillips, D. C., & Soltis, J. F. (2004). *Perspectives on learning*. Teachers College Press.

Pinar, W. (1995). *Understanding curriculum: An introduction to the study of historical and contemporary curriculum discourses*. Counterpoints,; v. 17; Variation: Counterpoints (New York, N.Y.) □;; v. 17. New York: P. Lang.

Pinar, W. (2004). The reconceptualization of curriculum studies. In D. J. Flinders & S. J. Thornton (Eds.), *The Curriculum Studies Reader* (2nd ed., pp. 168-175). New York, NY: RoutledgeFalmer.

Pinar, W. (2006). *The synoptic text today and other essays: Curriculum development after the reconceptualization*. Complicated conversation. New York: Peter Lang.

Plato. (1888). *The republic of Plato*. (B. Jowett, Ed.).

Pollock, D. (2006). Marking new directions in performance ethnography. *Text and Performance Quarterly*, *26*(4), 325-329.

Postman, N. (1993). *Technopoly: The surrender of culture to technology*. New York: Knopf.

Price, J. L. (1974). *Culture and society in the Dutch republic during the 17th century*. Batsford.

Regian, J. W., & Shute, V. J. (1992). *Cognitive approaches to automated instruction*. Routledge.

Reigeluth, C. M. (1983). *Instructional-design theories and models: An overview of their current status*. Routledge.

Reigeluth, C. M., & Beatty, B. J. (2003). Why children are left behind and what we can do about it. *Educational Technology, 43*(5), 24-32.

Reinking, D., & Bradley, B. A. (2007). *On formative and design experiments: Approaches to language and literacy research*. Teachers College Press.

Reiser, R., & Ely, D. (1997). The field of educational technology as reflected through its definitions. *Educational Technology Research and Development*, *45*(3), 63-72. doi:10.1007/BF02299730

Rhodes, R. (2007). *Arsenals of folly*. Alfred A. Knopf.

Richardson, L. (1998). Fiction and ethnography: A conversation. *Qualitative Inquiry*, *4*(3), 328-336.

Richardson, L., & St. Pierre, E. A. (2005). Writing: A method of inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research* (3rd ed., pp. 959-1026). Thousand Oaks: Sage Publications Inc.

Roy, K. (2003). *Teachers in nomadic spaces: Deleuze and curriculum*. Complicated conversation. New York: P. Lang.

Ryle, G. (1971). *Collected papers*. London: Hutchinson.

Saettler, P. (2000). *The evolution of American educational technology*. IAP.

Schiff, R. (2008). *Revolver*. University of Iowa Press.

Scott, T. (2008). "Happy to comply": Writing assessment, fast-capitalism, and the cultural logic of control. *Review of Education, Pedagogy & Cultural Studies, 30*(2), 140-161. doi:10.1080/10714410801996965

Sedgwick, E. K. (1997). *Novel gazing: Queer readings in fiction.* (E. K. Sedgwick, Ed.). Durham [N.C.]: Duke University Press.

Sedgwick, E. K., & Frank, A. (2003). *Touching feeling: Affect, pedagogy, performativity*. Duke University Press.

Semetsky, I. (2005). Experience. In A. Parr (Ed.), *The Deleuze dictionary* (pp. 89-90). Columbia University Press.

Seymour, P. H. K., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology, 94*(2), 143. doi:Article

Shipley, J. T. (1984). *The origins of English words*. JHU Press.

Singer, C. J. (1978). *A history of technology: The Mediterranean civilizations and the Middle Ages, c. 700 B.C. to c. 1500 A.D.* Clarendon Press.

Skinner, B. F. (1953). *Science and human behavior*. Retrieved from http://books.google.com/books?lr=&ei=5dv5SumDOYG0yQTS2OGhDw&id=YAMNAAAAIAAJ&dq=skinner&q=response#search_anchor

Slack, J. D. (2005). *Culture + technology: A primer*. New York: Peter Lang.

Slattery, P. (2006). *Curriculum development in the postmodern era* (2nd ed.). New York: Routledge.

Spradley, J. P. (1980). *Participant observation*. New York: Holt, Rinehart and Winston.

Steinberg, D. H., & Palmer, D. W. (2004). *Extreme software engineering: A hands-on approach*. Upper Saddle River, N.J: Pearson Prentice Hall.

Stewart, K. (1987). *Narrative Appalachia (West Virginia, ethnopoetics)*. University of Michigan. Retrieved from http://proquest.umi.com/pqdweb?did=753009361&Fmt=7&clientId=48776&RQT=309&VName=PQD

Stewart, K. (1996). *A space on the side of the road: Cultural poetics in an "other" America*. Princeton: Princeton University Press.

Stewart, K. (2005). Cultural poesis: The generativity of emergent things. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE Handbook of Qualitative Research* (3rd ed., pp. 1027-1068). Thousand Oaks: Sage Publications.

Stewart, K. (2007). *Ordinary affects*. Durham, NC: Duke University Press.

Stewart, K. (2008). Weak theory in an unfinished world. *Journal of Folklore Research, 45*(1), 71-82.

Stober, T., & Hansmann, U. (2009). *Agile software development: Best practices for large software development projects*. Springer.

Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing*. Sage Publications Inc.

Swain, M., & Deters, P. (2007). "New" mainstream SLA theory: Expanded and enriched. *The Modern Language Journal, 91*(5), 820-836. doi:10.1111/j.1540-4781.2007.00671.x

Tactical language and culture training system - demo video. (2008). . Retrieved from http://www.youtube.com/watch?v=DLKsZ3_8qLg&feature=youtube_gdata

Taher, M. (1997). *Encyclopaedic survey of Islamic culture*. Anmol Publications PVT. LTD.

Talburt, S. (2004). Ethnographic responsibility without the "real." *Journal of Higher Education, 75*(1), 80-103. doi:Article

Tarde, G. de. (1907). *Social laws: An outline of sociology*. New York: Macmillan.

Taussig, M. T. (1993). *Mimesis and alterity: A particular history of the senses*. New York: Routledge.

Taylor, F. W. (1919). *The principles of scientific management*. Harper & Brothers.

Texas Education Agency. (n.d.). Chapter 110. Texas Essential Knowledge and Skills for English language arts and reading. Texas Education Agency. Retrieved from http://ritter.tea.state.tx.us/rules/tac/chapter110/index.html

Thorndike, E. L. (1906). *The principles of teaching: Based on psychology*. Syracuse and New York: Mason Printing Corporation. Retrieved from

http://books.google.com/books?lr=&ei=_9r5SvjJH6CGygT_z_DXDg&id=e_YmDxS8JikC&dq=thorndike&q=effect#search_anchor

Thorp, L. (2005). *The pull of the earth: Participatory ethnography in the school garden*. AltaMira Press.

Thrift, N. J. (2008). *Non-representational theory: Space, politics, affect*. NY: Routledge.

Tolstoy, L. (1982). *War and peace*. (R. Edmonds, Ed.). Penguin Classics.

Tomkins, S. S. (1965). *Affect, cognition, and personality: Empirical studies*. (American Psychological Association, Ed.). New York: Springer Pub. Co.

Toscano, A. (2004). Preface: The colored thickness of the world. *The Signature of the World, or, What Is Deleuze and Guattari's Philosophy?* New York: Continuum.

Trancealot Technologies. (n.d.). Journamatic - your journal: Automatic. Retrieved March 21, 2011, from http://www.journamatic.com/

Travers, R. M. W. (1982). *Essentials of learning*. Macmillan.

Tulip mania. (n.d.). *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/Tulip_mania

Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. University of Chicago Press.

Ulmer, G. L. (1985). *Applied grammatology: Post(e)-pedagogy from Jacques Derrida to Joseph Beuys*. Baltimore: Johns Hopkins University Press.

Ulmer, G. L. (2005). *Electronic monuments*. Electronic mediations. Minneapolis: University of Minnesota Press.

Valencia, R. R. (1997). *The evolution of deficit thinking*.

Vasudevan, L. M. (2006). Looking for angels: Knowing adolescents by engaging with their multimodal literacy practices. *Journal of Adolescent & Adult Literacy, 50*(4), 252-256. doi:Article

Vendler, H. (1995). *The breaking of style: Hopkins, Heaney, Graham*. Cambridge, Mass: Harvard University Press.

Voithofer, R. J. (2000). *Creating a new media pedagogy through cultural studies approaches to the design of educational technology: Using discourse, subjectivity, and agency to (re)tell stories about cancer*. The University of Wisconsin - Madison. Retrieved from http://proquest.umi.com/pqdweb?did=728341371&Fmt=7&clientId=48776&RQT=309&VName=PQD

Volti, R. (2000). *Society and technological change*. Macmillan.

de Vries, J., & der Woude, A. van. (1997). *The first modern economy: Success, failure, and perseverance of the Dutch economy, 1500-1815*. Cambridge University Press.

Wallace, R. M. (2004). A framework for understanding teaching with the internet. *American Educational Research Journal, 41*(2), 447-488. doi:10.2307/3699373

Walters, J. (2006). Methods of teaching inferring meaning from context. *RELC Journal, 37*(2), 176-190. doi:10.1177/0033688206067427

Weade, G., & Evertson, C. M. (1991). On what can be learned by observing teaching. *Theory Into Practice, 30*(1), 37. doi:Article

Weiner, L. (2006). Challenging deficit thinking. *Educational Leadership, 64*(1), 42-45. doi:Article

Weiss, R. S. (1994). *Learning from strangers: The art and method of qualitative interview studies*. New York: Free Press.

Westbrook, R. B. (1993). *John Dewey and American democracy*. Cornell University Press.

Whitehead, A. N. (1967). *The aims of education and other essays*. Simon and Schuster.

Widtsoe, J. A. (1928). *Success on irrigation projects*. New York: J. Wiley.

Willcocks, W. (1917). *Irrigation of Mesopotamia*. E. & F. N. Spon, limited.

Willig, C., & Rogers, W. S. (Eds.). (2008). *The SAGE handbook of qualitative research in psychology*.

Wills, J. S., & Sandholtz, J. H. (2009). Constrained professionalism: Dilemmas of teaching in the face of test-based accountability. *Teachers College Record*, *111*(4), 1065-1114. doi:Case Study

Wilson, B. G. (1997). The postmodern paradigm. In C. R. Dills & A. J. Romiszowski (Eds.), *Instructional development paradigms* (pp. 297-309). Educational Technology.

Winchester, S. (2004). *The river at the center of the world*. Macmillan.

Wiske, M. S. (1998). *Teaching for understanding: Linking research with practice*. Jossey-Bass Publishers.

Wolcott, H. F. (2005). *The art of fieldwork* (2nd ed.). Walnut Creek, CA: Altamira Press.

Wolcott, H. F. (2008). *Ethnography*. Rowman & Littlefield.

Wraga, W. G. (2009). W. W. Charters: Information from Answers.com. Retrieved November 10, 2009, from http://www.answers.com/topic/w-w-charters

Wright, R. (1977). *American hunger*. Harper & Row.

Yanchar, S., South, J., Williams, D., Allen, S., & Wilson, B. (n.d.). Struggling with theory? A qualitative investigation of conceptual tool use in instructional design. *Educational Technology Research and Development*. doi:10.1007/s11423-009-9129-6

Yeaman, A. R. J. (2001). Foreword. *Educational technology: the development of a concept* (p. vii-xii). Englewood, CO: Libraries Unlimited. Retrieved from http://books.google.com/books?id=mlZsIIoOaSYC&lpg=PP1&dq=educational%20technology&pg=PR11#v=onepage&q=&f=false

Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American Educational Research Journal*, *40*(4), 807-840. doi:10.2307/3699409

Zhao, Y., Pugh, K., & Sheldon, S. (2002). Conditions for classroom technology innovations. *Teachers College Record*, *104*(3), 482-515.

Žižek, S. (1993). *Tarrying with the negative: Kant, Hegel, and the critique of ideology*. Duke University Press.

Žižek, S. (2008). Lacan's four discourses. In G. Forter & P. A. Miller (Eds.), *Desire of the Analysts: Psychoanalysis and Cultural Criticism* (pp. 81-97). Albany: State University of New York Press.